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APPLE EXEC PLANTS SEEDS OF OPEN-SOURCE DISCONTENT

SIDESWIPES COMPETITORS AS DARWIN KERNEL OPENS

BY DOUGLAS FINLAY

Does anyone really know what passes for mainstream in the industry anymore?

That's the question Apple Computer Inc. raised at last month's Internet World show when it announced it was releasing Darwin 1.0, the Macintosh operating system's core kernel, and claimed it to be "the only mainstream operating system following an open-source model."

Philip Schiller, Apple's vice president of worldwide product marketing, has clearly caused resentment among open-source advocates by excluding several companies and systems from the ranks of the mainstream.

"I think it's a strange claim," remarked Steve Sakoman, chief operating officer of Be Inc. (www.be.com). "I would consider Solaris and Linux to be fairly mainstream operating systems as well," he said. Be recently opened up the Tracker and Deskbar portions of BeOS 5 to the open-source community in hopes of garnering more creative applications for—and wider acceptance of—the operating system (see story, page 10).

Chris DiBona, Linux community evangelist for VA Linux Systems Inc. said, "It's fine that they don't think that Linux is mainstream enough. It doesn't change the fact that we're running on 30 percent of all the Web servers in the world."

But Ken Bereskin, director of operating-system technologies at Apple (www.apple.com), moved

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It's Not DOM, It's DirectDom

IBM technology brings client-side Web interaction to new, richer level

BY DAVID RUBINSTEIN

IBM believes its new, client-side DirectDom technology provides users with a richer means of communicating with Internet servers than what is currently available with HTML, JavaScript and other browser-level technologies based on marked-up text. But it's the potential for a broader applicability to server-side applications that has Big Blue's engineering team excited.

"This area is ripe for research," said Andrew Donoho, an IBM senior engineer who has worked on the DirectDom project. "There is a whole world of XML grammars, and each parses down to a DOM [Document Object Model] tree. DirectDom is a start to how we peel that box open" and apply DOM technology to server-to-server and server-to-client communication.

JAVA-BASED

Donoho said DirectDom was conceived about a year ago by IBM's engineering team, based on the emergence of Web browsers as effective mechanisms for deploying applications. DOM has been a W3C-endorsed Level 1 specification since October 1998, but IBM has added its own twist by basing it on Java.

"We found this nugget of gold on the floor of the standards body and we're running with it," Donoho said. "We're putting some muscle behind the W3C DOM. We're saying the APIs are good and need to be supported on many browsers." And by basing DirectDom on open standards, Donoho explained, it is impossible for any one vendor to unilaterally make changes, creating a more reliable platform.

DirectDom, according to Donoho, will allow Java developers to manipulate the DOM to build graphical user interfaces. They do so by writing packages called Weblets, which are Java client programs that use the client user interface facilities of a DOM-compatible browser or other DOM viewer (such as Adobe's Scalable Vector Graphics plug-in for Microsoft's Internet Explorer browser) to render and control its interface via the W3C's DOM standards and HTML 4.0. These DOM user interface facilities, according to IBM, include widgets, layout,

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STUDY DECRIES CURRENT LACK OF LINUX DEVELOPMENT TOOLS

BY DOUGLAS FINLAY

A just-released survey of more than 300 Linux developers reveals that three-quarters of them give low marks to the development tools available for the operating system.

Of 11 categories of tools classified and studied in the report, 75 percent of the interviewees stated that only compilers and editors were adequate for their jobs. The other tool classifications, including debuggers, profilers, modeling tools, error-detection tools, GUI frameworks, testing tools and code management tools, rated anywhere from a low of 10 percent to 50 percent adequate.

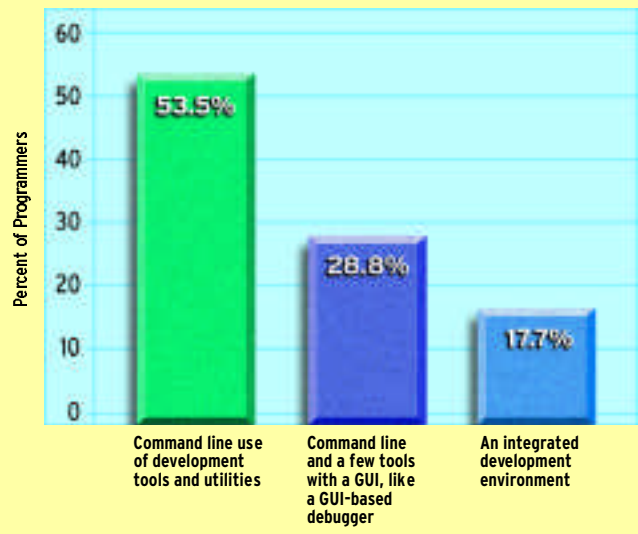
The report even stated that over half the Linux developers in the study still predominantly use command line tools and utilities.

The survey, done by Evans Marketing Services of Santa Cruz, Calif., provided a look into developers' feelings toward the languages they use, the desktop environments they work in, and their relationships with open-source software issues and development tools.

The report also shows that 87 percent of developers don't care if the tools they use are open source or proprietary. In the report, Janel Garvin, vice president of research at Evans, said, "Linux has shown fast growth up to now, but development tools are enormously strategic to an operating system, and there is a crying need for tools if Linux is going to survive."

The report, part of the newly created Linux Developer Series, is available for order at www.evansmarketing.com. ▮

A MATTER OF STYLE



When asked how they build applications, Linux developers said they prefer command line coding to IDEs by more than 2-to-1.

Source: Linux Developer Opinion Survey, Evans Marketing Services

Chris Dressler, Senior Program Manager, **NORDSTROMshoes.com**

“So the challenge here was knowing the speed of how quickly we had to bring shoe vendors online.”

“We went from 6 to 10 to 20 vendors and we’re continuing down that road.”

“So how do we rapidly do the development to make all this happen?”

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IBM Dell Hewlett-Packard Compaq NEC Fujitsu Hitachi Gateway

XSL Editing for the Uninitiated

Excelon's strategy for holding off competition: Address the less technical

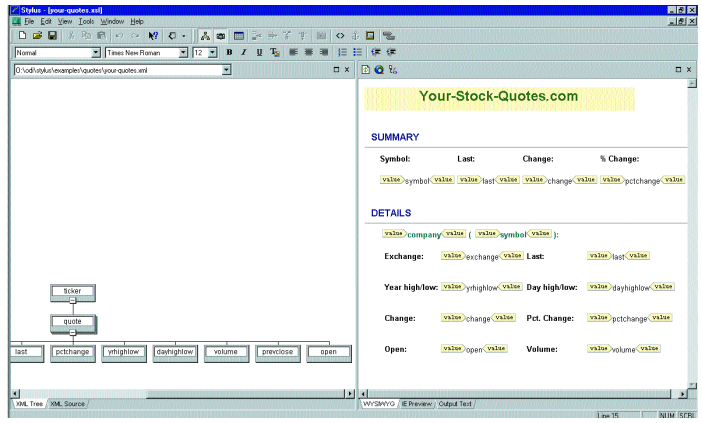
BY DOUGLAS FINLAY

In an attempt to stall any serious competition in the fledgling Extensible Stylesheet Language (XSL) editor market, Excelon Corp. claims that its Stylus version 2.0 is targeted toward less-technical programmers with little expertise in XML or XSL programming. Despite this new focus, the release continues to have features that should attract advanced programmers.

The original version of Stylus helped developers mix and match HTML and XML. Version 2.0 departs from that code-heavy tradition by offering a graphical interface to enable XML elements to be dragged and dropped into a stylesheet template. Carl Sjogreen, a product manager at Excelon (www.exceloncorp.com), called XSL a way to slice and dice XML to provide personalized views of documents.

"The significance of Stylus 2.0 is that it introduces the graphical interface to create a blueprint for an HTML page," explained Sjogreen.

"Beginner developers can create an XSL stylesheet that generates more dynamic Web pages, without having to know XML or XSL code," he said.



The drag-and-drop features of Stylus 2.0 raise the competitive bar by allowing beginning developers to generate XSL style sheets.

Sjogreen said that version 2.0 also is ideal for advanced developers because they can start a project by creating XSL stylesheets, and then continue with more developed code. "It works in both low-level and WYSIWYG modes seamlessly," he said. "You can switch back and forth between the two modes."

However, Sjogreen sees little reason for advanced developers to actually take the low-level, code-heavy approach when creating stylesheets in 2.0. "Every time a developer wants to bold a field in XML, he has to go in and mess with code." That, he said, "could get tedious."

MAKING XML VISUAL

Indeed, Bryan Garcia, chief scientist at Talx, a St. Louis-based software house building turnkey Web and integrated voice solutions for the human resources marketplace, utilizes Stylus 2.0 to present XML in a visual manner. XML has no inherent visual representation, Garcia said, but by placing it into the XSL stylesheet editor, he is able to "turn XML into a visual representation" on the Web.

"Another application we use it for, which is buried under the covers of our product, is to standardize on voice-error messages," he said. "We take the XML document that describes the voice-error message and use the XSL editor to transform the XML into Visual Basic or C++ code for displaying the error on the screen."

He added that Stylus has enabled the company to write a user interface for Web-centric applications and another user interface for integrated voice applications while writing the business logic only once, thus drastically reducing development time.

AIMING FOR FIRST TO MARKET

Sjogreen said Excelon is positioning itself as the industry leader in this space by marketing the only available XSL editor product line. "The XSL standard just became a standard [in November 1999]," he said, "and a lot of major tools vendors have waited until the standards became finalized before committing to developing tools for it."

He said because products for XML and XSL still lag behind the technology, Excelon moved quickly on the opportunity to create a set of tools for the new language. "If you look at HTML, graphic editors followed the introduction of the technology quite a bit later," he said, "and only after everyone wanted to create Web pages. That's when FrontPage appeared."

Stylus 2.0 is available as a stand-alone product for $199; it's also one of the tools included with Excelon's 2.0 Dynamic Applications Platform.

PARTNERSHIP EXPANDS EDI OFFERINGS

Excelon recently announced a partnership with XMLSolutions Corp. (www.xmls.com), in which Excelon will incorporate XMLSolutions' XEDI Translator into Excelon's B-to-B Integration Server, which will enable the two companies to extend and expand their existing electronic data interchange (EDI).

Currently, the B-to-B Integration Server permits companies to build and leverage current EDI solutions, while extending and augmenting those solutions to provide richer interactions with customers.

Because the Java-based XEDI Translator is capable of integrating EDI trading systems, said Excelon's Sjogreen, its incorporation into the B-to-B Integration Server will further extend EDI systems into non-EDI trading partners. The benefit, he said, is that a much larger number of companies will be able to take part in Internet-based trading communities. ■

UML DATA MODELING BLOOMS ON ROSE

Rational brings teams together with one-tool, one-notation solution

In an effort to speed development by uniting team members with one tool in one notation, Rational is scheduled this week to release a UML-based data-modeling element as part of its Rose development tool.

"Data modelers and developers often butt heads and work in languages and notations the other doesn't always understand," said Rational Rose Data Modeler product manager Eric Naiburg. "This will get them into one tool so they not only can see changes, but can understand them and generate the code for changes."

Rational, Naiburg said, is creating a new UML profile that extends the language to get it to support data modeling with such added functionality as indexes, primary keys and schema generation. With Data Modeler's object-relational mapping, development teams will be able to take a data model and transform it into an object model, or vice versa, allowing the team to see and understand what is happening during construction of a new database or while reverse-engineering an existing database.

Other changes to Rational Rose to accommodate Data Modeler include a data-model-only specification and relational database support for IBM's DB2 MVS and UBD, Microsoft's SQL Server 6.5 and 7*x*, Oracle's 7.3 and 8*x*, and any ANSI SQL 92-compliant database.

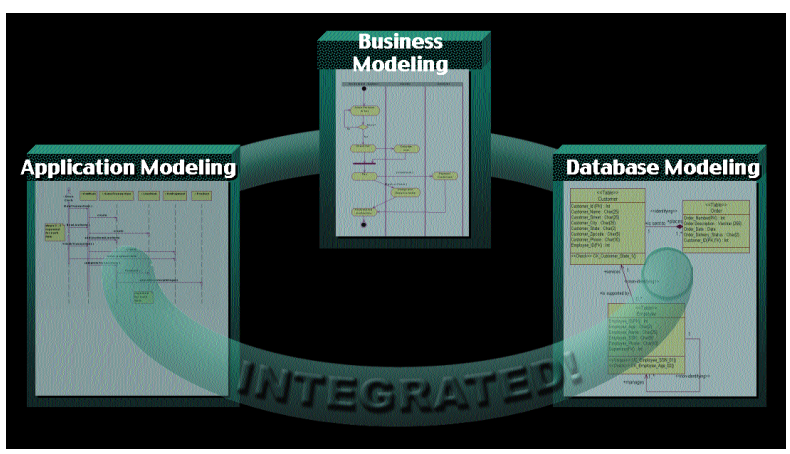
Rose Data Modeler will be sold separately or as part of Rational's Analyst Studio, which provides tools for problem analysis, system definition and requirements management in one solution, Naiburg said.

Data Modeler runs on Windows, but the databases can reside on a variety of platforms, including Linux, Solaris, AIX, HP-UX and Windows NT. A stand-alone license and one-year support for Data Modeler is $2,400.

RATIONAL CLEARCASE AVAILABLE FOR LINUX

Rational has made its software configuration management solution, ClearCase 4.0, available with Red Hat Linux, marking an extension of Rational's Linux strategy. In January, Rational announced it was working with Intel to make its applications available on Linux for IA-64.

"Linux has emerged as a scalable platform for developing Internet software, but customers continue to face the…need to develop higher-quality software in Internet time," said Eric Schurr, Rational's senior vice president of marketing. ■



Rational Rose Data Modeler brings together development team members in a unified, integrated modeling tool based on UML.

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Ted Bahr, Publisher

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RED HAT RIDING HIGH WITH TWO RELEASES

Linux 6.2 simplifies clustering; embedded OS aims for appliances

BY EDWARD J. CORREIA

Since 1998, paid Linux distributions have been the fastest-growing segment of the server-operating-system market, according to a recent study by International Data Corp. Helping to fuel the rise has been Red Hat Inc., which is stepping up its offerings with a pair of releases.

With the availability of Red Hat Linux 6.2 and eCos 1.3, the open-source solution provider is targeting both ends of the e-commerce marketplace, offering platforms for both the server and Internet client devices.

Inherited during the acquisition of Cygnus Solutions earlier this year, eCos 1.3 is the first release by Red Hat (www.redhat.com) of the embedded configurable operating system that will include a built-in TCP/IP stack (see story, page 13).

Red Hat Linux 6.2 will feature a much-improved graphical installation process, according to a company report, and now features a partitionless installation option that permits Red Hat Linux to be installed as a bootable file without overwriting the pre-existing operating system. This feature—not exclusive to Red Hat—allows hesitant users to install and experience Red Hat Linux without committing to a change in operating systems.

Perhaps more significant are reliability and performance features of version 6.2, which although not all new, have been improved and documented, making them more accessible to developers. "Red Hat has had clustering technology in its release since before [version] 6.1," said Michael Tiemann, chief technical officer of Red Hat, "but we never made a big deal about it. It was really part of a technology grab bag that developers could use [to] build applications. Developers

who had the necessary knowledge and training could build high-availability Web servers, and high bandwidth server solutions, but they had to know how to do it. With the release of 6.2, we have brought those capabilities to the front."

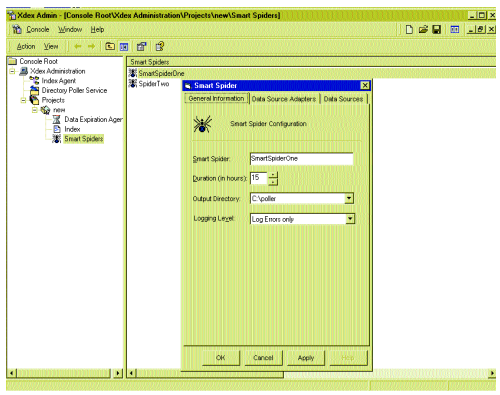
Both eCos 1.3 and Red Hat Linux 6.2 are shipping now. eCos is available for free download at sourceware.cygnus.com/eCos. The standard edition of Red Hat Linux 6.2 is available for $29.95 and includes the operating-system source code on two CDs, documentation on a third CD, 90 days of e-mail support and 30 days of priority online access to updates. The $79.95 deluxe edition will deliver two additional CDs containing open-source applications, including Open Mail from Hewlett-Packard Co. and Emusic Player from Emusic.com Inc., a company that operates a try-and-buy music Web site.

The third bundle, the professional edition for $179.95, was designed for organizations attempting to set up e-commerce Web sites. It adds to the above mix a total of five CDs full of applications, including a credit-card-verification system, plus 30 days of configuration for the included Apache Web server and 180 days of priority online access. All packages also include a subscription service that updates the operating system through an automated Internet delivery service.

In addition, developers choosing Red Hat Linux receive a bevy of open-source developers' tools, including the GNU C and C++ compiler, debugger and editor, which the company also gained from Cygnus. ▮

SEQUOIA INDEXES, SEARCHES XML DATABASES

The whole point of the Extensible Markup Language (XML) is that the data and metadata are bound together so that the data has meaning. The problem with this, according to Sequoia Software Corp., is that existing indexing and searching tools don't understand the XML metadata tags and how they relate to the content of data files—and thus don't help users find precisely what they're looking for. Addressing that problem, says the company, is its new Xdex XML search tool, expected to ship mid-April.



The interface for the administrator to configure Smart Spiders for indexing XML documents.

"Organizations are beginning to generate and exchange significant volumes of XML content," said Bryan Caporlette, Sequoia's vice president of product management. "Xdex gives these organizations a way to rapidly and cost-effectively index XML content from distributed sources and make it available to users for context-sensitive searches. The approach taken by Sequoia eliminates the need to transform XML into relational database tables or schemas, making it easy for our customers to add new data elements to their index."

The screen for Xdex on which a user builds search queries.

According to the company (www.sequoia.com), Xdex indexes data by both its actual context as well as the metadata tags, thereby allowing context-specific searching capabilities. For example, searching for the city name "Columbia" would be differentiated, by its XML tags, from a reference to the Columbia River. Xdex searches Web servers, FTP servers or local file systems, according to the company, and can automatically index well-formed or valid XML documents without the need to predefine XML structures or schema fields. Developers can define an element-matching thesaurus that equates data fields that have different tag names but the same meaning.

Xdex (www.xmlindex.com) ships with an SDK that allows developers to customize the application to meet their specific needs. In addition, Xdex incorporates server-side Extensible Style Language (XSL) to transform XML search results to HTML for formatting and presentation. Xdex runs on Windows NT and is priced at $1,995 per server; the company intends to port the software to AIX, HP-UX, Linux and Solaris. ▮

Improved App Server Provides Power to the Front-End People

BY DAVID RUBINSTEIN

As more enterprises move onto the Internet, more architectures will have to be multitiered and Web enabled, and many will be based on Java components. Persistence Software Inc. has updated its application server, PowerTier, to assist with this migration; version 6 promises to allow browser-based access to all back-end entity JavaBeans.

The key element of PowerTier 6 is PowerPage, a Java Server Pages code generator, which extends PowerTier's ability to automatically generate Enterprise JavaBean (EJB) components from an object model using object/relational mapping technology.

The benefit of adding the new PowerPage element to PowerTier, said Randy Hietter, vice president of product management at Persistence (www.persistence.com), is that it makes the entire development team more efficient.

"We are now giving the front-end designer precoded HTML in the form of Java Server Pages so they can now see and work with back-end enterprise Java," Hietter said. "This takes the mystery out of working with enterprise JavaBeans."

The second key feature of the new release, according to Hietter, is a Java servlet engine that maximizes flexibility and scalability by minimizing any single point of failure. The servlet engine, Hietter explained, connects the front-end world of HTML/HTTP with the back-end EJB world. PowerTier 6 has the ability to run multiple instances of each layer, providing stateful failover should any part of the system go down.

"Browser clients can connect to a PowerTier Apache Web server, which can talk to a servlet engine, which can then talk to an EJB server running on a completely different machine," Hietter said.

"If you have designed an application where you think the servlet might be the bottleneck, you can replicate multiple instances…and load balance across them," he said. "Alternatively, if you think a point of contention will be with data access, you can architect your system where the servlet engine and EJB server are co-located on the same physical machine in the same physical process, and…multiple instances can be created for load balancing across that server."

Hietter said PowerTier 6 will have Java 2 Enterprise Edition certification in the second half of this year, and added that Persistence will try to enlist third-party tool vendors and will offer third-party component certification.

PowerTier 6 is now available, with developer kits priced at $7,500 and deployment licenses at $25,000, and then will be priced according to CPU.

"Enterprise architectures are changing," Hietter said. "Companies have to be offering the complete solution that meets what is perceived as the enterprise model." ▮

Virtual Vendor Subs Out Projects for Pay

Asynchrony attracts developers with cash incentives

BY LISA MORGAN

Last month, a company called Asynchrony.com LLC announced the beta launch of a collaborative development community in which developers create software for Asynchrony and are compensated for their efforts. In the first week, the Asynchrony.com community attracted 1,000 developers, but it remains to be seen whether the company's cash incentives cause management and legal problems for development managers.

"The most exciting thing is we're creating a new way for programmers and managers to create value and profit from their contributions," said Bob Elfanbaum, president of St. Louis-based Asynchrony.

"It's a very exciting idea," said Larry O'Brien, vice president of research and development for iMind education systems, which provides technology-based solutions to the educational community. "It could be significant to the software industry, but it may take a few years before it's really successful."

Asynchrony has modeled its business after the open-source community model, in which virtual teams can collaborate on projects. With Asynchrony, however, the primary incentive is cash, not creating new intellectual property that's freely given away to the world at large. Virtual teams may comprise programmers, project managers, technical writers, testers, designers and graphic artists who use the Asynchrony.com Web site for meetings and manufacturing, as well as the marketplace to sell their completed products.

Participation in the community is free, and according to the company, the members of the development teams retain a collective 75 percent to 90 percent of each product's sales revenue. When a project is established, each team member is assigned a number of "shares," based on the level and value of his contribution, which are later used to determine compensation.

Dan Kusnetzky, vice president of systems software research at International Data Corp., said Asynchrony is one of many companies that will modify the open-source model. "As the open-source model matures, we'll see all kinds of experiments," he said. "[Asynchrony] has a possibility of being successful. It's an interesting attempt."

Left to right: Dave Elfanbaum, Steve Elfanbaum, Nate McKie, Bob Elfanbaum.

MOONLIGHT DEVELOPMENT

Although Asynchrony is appealing to professional developers and project managers to work on its projects on an "off-hours basis," their participation in the service could represent managerial challenges and legal implications for their employers. One problem is the use of company resources and lost productivity.

"If I had proof that one of my developers was moonlighting, it would definitely cause problems," said iMind's O'Brien.

A more serious potential problem is knowledge transfer. Asynchrony retains all rights to the intellectual property and plans to sell the end products as downloads, shrink-wrapped software or third-party licenses. Asynchrony's contract addresses knowledge transfer, but an employee's understanding of intellectual property rights may vary greatly from his corporate legal department.

"Knowledge transfer is sticky," said O'Brien. "If a developer was not diligent about working on the up-and-up, it could be a problem."

Bob and his brother Steve Elfanbaum, who is Asynchrony's chairman, said that conflict of interest won't be a problem. "We spent a tremendous amount of time ensuring that we're not taking information from companies," said Bob. "We are only interested in code that the developers have a right to."

Steve agreed. "The type of software that developers work on at Asynchrony is the type they love to write. I really doubt that given the choice, most programmers would choose their company's current projects to work on in their spare time," he said.

Nate McKie, chief technical officer at Asynchrony, is confident about the company's success. "We owe our confidence to the open-source movement because virtual teams can put together amazing software," he said. "We love the open-source model; however, we're positioned to succeed whether [it] succeeds or fails."

"We don't support any particular ideology," added Dave, the third Elfanbaum brother, who serves as executive vice president of marketing and business development. "We support programmers whether they want to develop proprietary or open-source projects."

Overall, O'Brien thinks Asynchrony represents a well-timed idea.

"The open-source movement is a gift culture," said O'Brien. "[It's] based on a heroic notion. I'm sure there are a lot of developers that think, 'My time is valuable.'" ■

News Briefs

COMPANIES

IBM Corp. and **Citrix Systems Inc.** will offer software developers a fast way to make existing applications ready for server-based hosting in application service provider (ASP) data centers. The initiative will establish Citrix ISV competencies as a key offering within IBM's ASP Prime Solution Center facilities worldwide. Through this alliance, the centers will be able to teach developers how to quickly enable existing, client/server applications for server-based ASP hosting and Internet delivery using Citrix MetaFrame application server software and NFuse application portal technology. Citrix NFuse allows applications running on a Citrix MetaFrame server to be "published" onto a Web page and accessed through a standard browser. IBM's ASP Prime Solution Centers include offerings to assist developers using the IBM Application Framework for e-business, AS/400 and Lotus Domino technologies, in addition to Citrix. ASP Prime Solution Centers are currently located in Beaverton, Ore., and Rochester, Minn. With this announcement, IBM will add four ASP Prime Solution Centers within IBM's PartnerWorld for Developers' Solution Partnership Centers (SPCs) in Waltham, Mass.; Hursley, England; Sydney, Australia; and San Mateo, Calif. Additional centers will be opening this summer in Paris, Tokyo and Stuttgart, Germany . . . **Macrovision Corp.** will buy closely held **Globetrotter Software Inc.** for 11.2 million of its shares, as the company looks to add software licensing to its existing line of copyright-protection products . . . **VMWare Inc.** announced an OEM agreement with **Microsoft Corp.**, under which VMWare customers will have the choice of Windows 98, NT or 2000 preinstalled in a VMWare virtual machine, which will be available later this year and called Ready to Run . . . **Vested Development Inc.**, a software development service provider, announced a round of equity and debt financing of up to $2 million. The company will finance growth in marketing, sales and service, and it has named Jim Norgaard vice president of sales . . . **Sybase Inc.** will license **Sun Microsystem Inc.**'s Java 2 Enterprise Edition (J2EE) technology and incorporate it into Sybase's Enterprise Application Server, Adaptive Server Enterprise and Enterprise Portal. The agreement ensures that Sybase's products will be fully compliant with the J2EE specification . . . **Hewlett-Packard Co.** and **Microsoft Corp.** are collaborating to offer Service Provider-in-a-Box, which will incorporate products from both companies to provide Web-enabling solutions for the creation of applications and services over the Internet . . . **Blue Sky Software Corp.** has changed its name to **eHelp Corp.**, reflecting the company's mission to provide customer assistance solutions for the Web, intranet and desktop applications, the company said . . . **Microsoft Corp.** has revamped its Open License program to provide more small- and medium-sized businesses with savings for licensing multiple copies of Microsoft operating systems, applications and server software.

PRODUCTS

Intuitive Systems Inc. is shipping its performance-profiling tool, **Optimizeit 3.1 Professional**, for Sun's Solaris. The tool, which also is available for Windows, is a Java-based language profiler that allows developers to test and improve the performance of Java applications, applets, servlets and JavaBeans, according to the company . . . Omnis Software has released **Omnis Studio 2.4**, the latest version of its 4GL rapid application development (RAD) program that provides a component-based environment for building GUI interfaces within e-commerce, database and server applications. This most recent release incorporates new features designed to aid the learning of 4GLs and object-oriented programming. Omnis Studio includes an Application Builder that can build complete libraries from preinstalled and modifiable data sets in just a few minutes, the company said. These applications can either take advantage of the internal database or connect to external databases such as Oracle, DB2 or MySQL. Using Omnis Studio cuts application development time by as much as 75 percent compared with 3GL environments (C++, Java), the company

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XMLSolutions' Schema Central Solves Dialect Dilemma

BY DOUGLAS FINLAY

Companies faced with the increasingly daunting task of partnering with suppliers that use different dialects of XML may warm to XMLSolutions Corp.'s Schema Central 1.0 XML storage and repository software.

As a Java-based machine, Schema Central 1.0 provides for XML dialects such as xCBL, FpML, cXML and ebXML—used by vertical markets to facilitate speedier exchange of documents—to be mapped and transformed into XML schemas, as well as for XML schemas to be transformed into various supplier XML dialects.

In addition to providing intercompany relief for translating growing XML dialects into appropriate schemas, Schema Central 1.0 addresses the intracompany dilemma of departmental overlapping of XML code, enabling various departments within the enterprise to reuse blocks of XML code for their own purposes, and eliminate redundancy.

"Schema Central is a centralized repository that stores information about XML and DTD [Document Type Definition] schemas," explained Daryn Walters, vice president of marketing for XMLSolutions (www.xmls.com). He indicated that Schema Central fulfills two distinct enterprise needs: managing all XML schemas within the company, and managing supplier XML dialects.

Concerning intracompany machinations, Walters said that when departments of the enterprise situated throughout the country or throughout the world first began implementing XML code, there was little communication among departments as to what the others were doing. "The problem quickly arose for the need to centralize and consolidate" development efforts and to create synergies between and among the departments, as XML became the new language of e-commerce.

With projects burgeoning, reusing code became a significant factor in reducing production time and costs, he said. Because "Schema Central imports XML schemas and parses them, loading them into a metamodel to segment the schemas and identify components that make up schemas," Walters said, it would be easy to identify the overlap in XML schemas, which can be reused.

He said schemas could also be departmentalized. "If the marketing department is building marketing applications, using several XML schemas, we can group them together into a marketing project, per se, and store it so other departments can see the XML schemas used for marketing," Walters said.

Regarding intercompany conflicts with suppliers, he claimed Schema Central 1.0 "demystifies" XML by generating XML dialects often used by supplier chains. "If one of your 10,000 supplier customers wants XML but also requires xCBL as well, developers can map that transformation, and generate an XSLT [Extensible Stylesheet Language Transformation] so that transformation will happen automatically, based on rules you define for that customer."

Indeed, he suggested his target customers are those whose supply partners trade across every vertical market imaginable. "The company may be required to supply 20 different versions of XML, so it needs capabilities to map on-the-fly, store that map based on a trading partner profile, and execute automatic transformation of the XML based on standards."

Available immediately, Schema Central runs on the Linux, Solaris and Windows NT platforms. ▮

GETTING TOGETHER WITH UML

Looking for a team-oriented project management suite capable of supporting C++ and Java development, XML, Enterprise JavaBeans and UML? TogetherSoft LLC's Together Enterprise offers those features in its new version 3.2 release—available in March—which followed hot on the heels of the Feb. 1 release of version 3.1.

Together Enterprise 3.1 included preliminary versions of several new features, including XML metadata interchange, the Rose import/export function in 98i/2000 format, and the simultaneous round-trip engineering of class diagrams and Interactive Data Language (IDL) programming. According to the company, version 3.2 has production-ready versions of these features in place.

TogetherSoft, founded in 1999, is led by president, CEO and self-described "software industry legend" Peter Coad, author of "Java Design" and former founder of Object International Inc.

In addition to the enterprise edition, which provides support for developers working in both Java and C++, TogetherSoft (www.togethersoft.com) offers versions of the software for the individual languages at $2,990 each. Together is available for Windows, Unix, Linux and Macintosh. ▮

BE GOES THE OPEN-SOURCE ROUTE

New strategy geared at gaining acceptance, attracting developers

BY DOUGLAS FINLAY

Stymied in its attempts to get its BeOS 5 operating system into users' hands when PC OEMs refused to bundle its operating system—even for free—Be Inc.'s latest strategy centers around opening up its desktop interface source code.

And in an unusual move, Be is departing from open-source practice by not requiring developers to pool and share their creations with the BeOS user community. Instead, they can maintain the applications for their own purposes.

Be released two portions of the operating system as open source in March: the Tracker, which is similar in function to Microsoft's Windows Explorer file system manager; and Deskbar, which provides functions comparable to the Windows Start menu bar. The strategy is to provide application developers with an opportunity to see how the operating system works by letting them see the source code, and to provide them with shortcuts in developing their applications.

"Because we've been watching the open-source movement very carefully, we thought about the steps we could take to provide support for the movement," remarked Frank Bosman, Be's vice president of marketing communications. "A logical way was to open up those portions of the code that present the bulk of the user interface to end users."

For third-party developers, having access to the operating system's source code, or even just portions of it, is anything but ordinary. "We're hopeful developers can come up with enhancements to the system we wouldn't have thought of, and we look forward to seeing them," Bosman said. He added that by opening up Tracker and Deskbar, developers would be able to see how the operating system traverses through file code and opens files to assist them in developing more enriching applications to the multimedia operating system, such as those written for Internet appliances.

He added that getting chunks of code to build on could cut third-party product development time significantly.

Perhaps most advantageous to developers is that they will not have to share their applications for feedback from the user community. Bosman said that while the open-source Linux community lives with a double-edged sword hanging over it—that of having access to a massive amount of source code while at the same time having to share its most creative developments with the community without the ability to commercialize on those applications—Be's FreeBSD license will enable them to create without sharing with any community.

"Our users could be corporations who develop applications that integrate into their platform, which they don't have to share with anyone," Bosman said.

A free version of BeOS 5 is available for download from free.be.com. Source code for Tracker can be found at www.opentracker.org, and Deskbar is at www.opendeskbar.org. ▮

APPLE

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quickly to qualify Schiller's remark, saying that "by mainstream, we think of desktop operating systems shipping to millions and millions of customers."

He claimed that only Apple and Microsoft can each lay claim to having more than 25 million customers using its operating system—at the desktop level. He added that while both Sun's Solaris and Linux could indeed be considered mainstream operating systems, "they are mainstream server operating systems" not actually used by consumers.

Bereskin said opening up Darwin 1.0 to developers would enable them to get immediate access to the I/O subsystem, the new kernel and the new Kernel Extension Developer Kit, (KDK), "giving developers an opportunity to get a good head start on OS X." But he made it clear that while the Darwin 1.0 foundation would be open to developers, the graphics, applications and interface levels of the new MacOS X above the Darwin foundation would remain proprietary.

Critics claim the announcement carries little weight, as the Darwin kernel was based on open source—the FreeBSD 4.4 operating system—to begin with.

Bereskin said that much of the future of the MacOS will be centered on the Mach 3.0 micro kernel, and that eventually all Macintosh servers and desktop systems will incorporate the Mach kernel, but that for now, the company will continue to offer both MacOS 9 and OS X. Around Mach, he said, there would be a full implementation of technologies, and a new I/O architecture addressing Apple's USB and FireWire markets.

Motivation for participating in open sourcing came from the public. "We believe the community at large can contribute to build a better product for our customers," Bereskin said. "There are some very smart, creative people that can help by shaking out bugs or adding new features or taking the technology in new directions," he said. ▮

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Is Embedded Linux Ready for Prime Time?

OEMs, developers increasingly attracted to platform, but it may not be right for all jobs

BY EDWARD J. CORREIA

If you're about to choose Linux as a Web server platform, you're in good company. According to Netcraft, an Internet consultancy, nearly a third of the world's Web sites are using Linux. Even Tom Goguen, group manager of Solaris software at Sun Microsystems Inc., conceded in a recent interview with *SD Times* that when combined with Apache, Linux "blows any other combination off the planet."

But is Linux the right choice for your embedded applications? For some, the answer is a resounding "maybe."

Edward Ghafari, vice president of marketing for Coollogic Inc., said that his company chose Linux for its economic advantages. "We can build solutions on embedded Linux that give us fast time-to-market and are cost-effective. There are a lot of third-party applications that you are able to integrate vs. develop from scratch. The costs associated with porting and developing proprietary applications and device drivers are what you save with embedded Linux." Dallas-based Coollogic (www.coollogic.com) develops CoolLinux, an embedded Linux solution targeting set-top box manufacturers and suppliers.

ONGOING INNOVATION

Neoware Systems Inc., which develops Linux-based information appliances, also praises the operating system as an embedded platform, but for different reasons. "There are thousands of programmers around the world that are contributing to the advancement of Linux," said Michael Kantrowitz, president and CEO of Neoware. "There is a great deal of innovation that is taking place in the Linux space, [and] we can leverage the work of programmers and contribute to that open-source community."

Neoware (www.neoware.com) targets businesses with information appliances such as thin clients, Web kiosks, cash registers, firewalls and routers, all of which are based on Linux core technology. "Instead of reinventing the wheel, we can focus on developing unique technologies around the core Linux operating system," said Kantrowitz.

We leverage Linux development, said Neoware's Kantrowitz.

Kantrowitz also cited an increase of available support for Linux developers, now that mainstream companies have begun to distribute the operating system. "Major corporations have coalesced behind Linux, so if a company wants to develop a cash register based on our operating system [for example], they don't have to rely on the open-source community, they come to Neoware…[or] to Red Hat to get support for the operating system."

However, developers relying on the open-source nature of Linux may not be able to for long. Such was the feeling of John Fogelin, vice president and general manager of Wind River Systems Inc.'s platforms business unit. "What comes out of the [embedded Linux] story to me is how much they have had to tailor the software to be specific to [an] application's needs," he said. "One thing we can't afford is to have different strains of Linux out there serving different segments of this embedded landscape and yet still claim that it's a platform and claim that the open-source community has rallied together, [when] in fact they appear to be disbanding and going off in different directions." Fogelin was among the original designers of Wind River's VxWorks, the most popular embedded RTOS after home-grown solutions, according to the 1999 Embedded Systems Study published by *Electronic Engineering Times*.

That is not to say that Wind River (www.windriver.com) does not embrace open-source technology. "Where we find open-source is a good foundation to include, we certainly do so," said Fogelin. "Wind River's TCP/IP stack was derived from BSD 4.4, the same source base used in the Linux stack." But Fogelin indicated that a substantial investment was levied to turn the original version into an RTOS network stack, which is now proprietary.

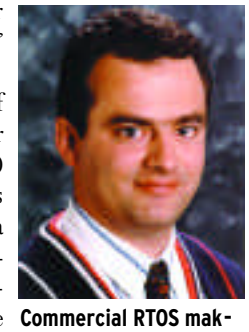
Still, Fogelin conceded that the Linux platform allows an independent software vending community to exist—one that may be open-source or may charge for its products. He warned that software like this might be making several assumptions, the biggest of which is that "the source code in question was written with your purpose in mind. So if you happen to be using a PC, and you happen to be building a desktoplike application and you've got all those resources around, then yeah, you [might] find it ports quite nicely."

It is just such assumptions that companies like Neoware and Coollogic are hoping to turn to their advantage. "You can take our core software and add virtually any Linux software that would be appropriate for an appliance," said Neoware's Kantrowitz, who described a situation in which an OEM customer required a wireless information appliance. "We easily located a driver for Linux [and] integrated it in 45 minutes."

Linux makes too many assumptions, said Wind River's Fogelin.

Coollogic's Ghafari agreed, saying that the problem with commercial RTOS solutions like VxWorks is the limited number of compatible off-the-shelf solutions. And while even Wind River's Fogelin conceded this point, he also had a few caveats. "You don't have to develop from scratch, that's true. [But] we have to be careful not to describe [Linux] to be something that it's not. You lose some of the value chain around Linux if you try to pretend it was built for a small-memory-footprint, reliable real-time operating environment. That is simply not what it was designed to do, and it has nothing to bring to bear on those problems," Fogelin said.

But, Neoware is of a different mind. For the company's first 10 years, its appliances operated on NetOS, a home-grown Unix-based operating system. Now Neoware has abandoned NetOS in favor of Linux and released its first Linux-based products in April, with time-to-market playing a key factor in this decision. "Although NetOS was standards-based and POSIX-compliant, we had to do all of our own in-house development and write all of our own drivers. The advantage of [using] Linux is that you can utilize the drivers that are available for Linux without having to rewrite them; utilize the kernel development that is being done in the open-source community," he said.



Commercial RTOS makers offer more value, said Cisco's Langlios.

Coollogic also approached the RTOS problem using a Unixlike solution that it purchased from QNX Software Systems Ltd., but like Neoware, it scrapped the RTOS in favor of Linux for its economic advantages. "Any time we wanted to come up with a new application or way of doing things, [development] was very costly," said Coollogic's Ghafari, who explained that the availability of Linux-based solutions—whether for free or off-the-shelf—helps his company reduce development and integration cycles.

"In the embedded environment," said Neoware's Kantrowitz, "I think Linux is going to be a leading technology when you look at small devices, not personal computers," a sentiment that Fogelin and Ghafari share. But Fogelin draws the line on the issues of determinism and reliability, which to him are one and the same. "For most desktop programmers, reliability is about taking the data in and generating the right result out," Fogelin said. "But in real-time operating environments, we introduce another variable: time. It's not good enough to have the right answer; you have to have the right answer at the right time. And that may seem like a subtle point, but it turns out to be quite a difficult challenge to get a system to behave in a deterministic fashion," he said. "[For instance], if you want to drop a few frames from the video stream in the interest of keeping the DSL connection alive, that's probably a worthwhile trade-off."

SLOW RESPONSE TIME

Coollogic's Ghafari agreed that Linux is not the right tool for every job. "If you're using Linux as a real-time operating

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PROS AND CONS

Advantages of Embedded Linux

- Low cost: The royalty-free kernel can be distributed without adding to the cost of a device.
- Open-source: Leverages a worldwide community of developers that build applications and drivers for Linux to improve time-to-market; constant innovation improves kernel.
- Available support: Mainstream companies now offer development assistance and support.

Disadvantages of Embedded Linux

- Hardware assumptions: Linux was developed expecting a desktop environment, therefore assuming the existence of a hard drive, MMU and unlimited power.
- Nondeterministic: Kernel has performance limitations, making it unsuitable for time-critical applications such as computer-assisted manufacturing and aerospace control.
- Fragmentation: Changes to kernel for custom devices cause a deviation from the platform, canceling the advantage of open-source developer community.

THROWING A RED HAT INTO THE RTOS RING

COMPANY BRANDS BUILD-TO-SCALE CONFIGURABLE EMBEDDED SYSTEM

BY EDWARD J. CORREIA

Embedded Linux RTOS developers, take heed. Red Hat Inc. last month threw its fedora into the RTOS ring with the release of eCos 1.3, a branded version of the RTOS inherited as part of Red Hat's acquisition of Cygnus Solutions earlier this year.

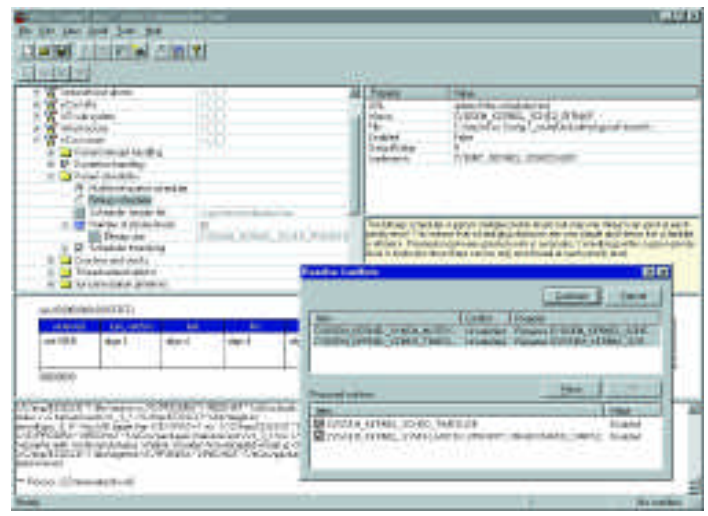
eCos technology allows custom kernels, said Red Hat's Tiemann.

According to chief technical officer Michael Tiemann, what Red Hat brings to the 4-year-old product is a greater degree of kernel configurability. "Our goal was to build an operating system that could be scaled down to very small devices, [and] that gives developers a structured way to express facts about code that makes [their code] more 'small-able'" said Tiemann. The royalty-free RTOS includes a TCP/IP stack and already is running on a wide variety of devices, such as set-top boxes, digital cameras, office-automation equipment and laser printers.

What sets eCos apart from other configurable operating systems is the degree to which the systems may be customized. Tiemann said that the kernel can exist in as little as 1KB or less of memory. "If you're a hard-core real-time developer, and you have written your own threading model and your own memory manager, and all you want from the operating system is chip initialization and interrupt vector setup and then to hand off to an application, on several platforms that requires fewer than 1,000 bytes," he said.

The platform is portable to seven CPU architectures and dozens of reference platforms, according to a company report.

What sets eCos apart from embedded Linux is the degree to which the kernel can be reduced. "Linux supports dynamically loadable modules, and you can configure the Linux kernel on an object-by-object basis." Tiemann explained. "But sometimes you want only parts of an object file, or you want data structures to be smaller because you're never going to need to use the feature that makes them larger. The eCos technology gives developers the ability to get exactly the features they want and carve everything else out." Tiemann described a customer that developed a 24KB eCos kernel for a digital television set, "which is on order of a tenth of what people have discussed in the Linux world."



Using the eCos configuration tool to build an RTOS, kernel elements are included based on tags embedded in the source code.

eCos is not based on Linux, but Tiemann believes there is some commonality between eCos and Linux. "Some of the technologies developed for eCos could have a place in Linux, and we anticipate that this technology will apply to Linux at some point in the future," he said, adding that it is conceivable that the Linux API could layer on top of eCos.

The product includes a kernel configuration and building tool, and supports nanosecond clock resolution, synchronization primitives, scheduling policies and interrupt handling mechanisms.

Red Hat (www.redhat.com) offers multiple support programs for eCos developers, ranging from $15,000 per year for a five-incident package to $80,000, which covers unlimited support incidents for as many as 15 developers. eCos 1.3 is available for free download at sourceware.cygnus.com/ecos. ■

mBedded Server Boosts Home-Appliance Market

Jini implementation sets stage for smart households, frees developers from platform restrictions

BY DOUGLAS FINLAY

With the release of its new mBedded Server for small appliances, ProSyst USA Inc. is aiming squarely at the set-top-box, Digital Subscriber Line (DSL) and cable-modem markets that will increasingly utilize embedded architecture to control home devices.

ProSyst (www.prosyst.com) claims that devices, or clients of the server, such as televisions and microwave ovens, will not necessarily require embedded software to operate or communicate with the server, provided the devices are equipped with either Ethernet or wireless communications capability.

A major feature of the mBedded Server is its 100 percent implementation of Jini, which does not require Sun Microsystems Inc.'s Remote Method Invocation (RMI) reference implementation. This enables developers to significantly reduce the amount of code in automatically generating a Jini proxy when developing applications, the company said. The Jini specification describes a method of spontaneously networking a variety of hardware and software through use of the Jini look-up service, which functions as an intermediary to connect clients on the network.

"Our implementation is different from Sun's in that it is designed specifically for embedded devices," explained Stefan Baramov, ProSyst's vice president of technical operations, adding that most Personal Java implementations and virtual machines for embedded devices don't support Sun's RMI, a proprietary communications protocol.

Because the mBedded Server works under the Open System Gateway Initiative (OSGI), providing a standardized platform from which to work, the company claims that developers will be able to write applications for set-top boxes, DSL modems and wireless applications such as those for cell phones without the need to know the platform of the target device.

According to the company, the mBedded Server offers a fast and economical means for development managers to take care of basic core functionalities. Device management services, such as automatic service installation and maintenance; the addition of applications, such as e-mail and FTP; and managing network access rights have all been designed into the product, to enable the developer to focus squarely on the application logic, said Baramov. "To have to maintain each functionality separately would be a very costly project," he said.

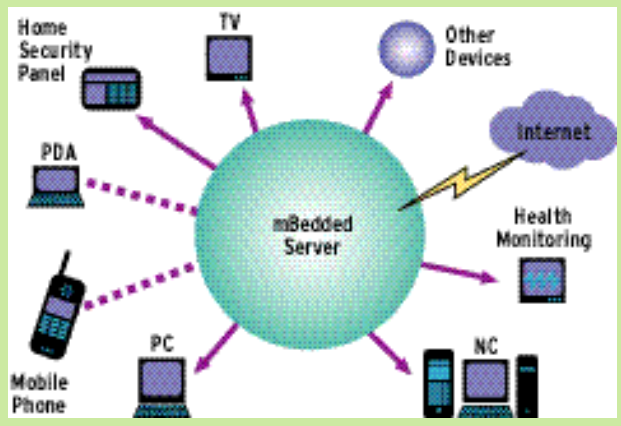
As a network service, mBedded Server requires each home appliance to feature an Ethernet or wireless connection to the server. In addition, all appliances plugging into focal points on the network—which the company calls gateways—will require Ethernet or wireless connections. "PCs can act as gateways, or Internet phones or home-security devices can act as gateways" in addition to TV set-top boxes, and DSL or cable modems, Baramov said.

But even though Baramov claimed that each home device would not require mBedded software simply to operate, he did admit that "at present, we do have some very good clients we are working with that are looking to embed our software into their hardware." But he emphasized it was not necessary for a TV to have mBedded software in it to function on the server.

mBedded Server boasts a small-memory footprint, ideal for adding or removing services. "The core server is 100K," said Baramov, "and the services running on the server take up no more than 500K." He maintained that because of its architecture, it scales well. "If 500K is too big, remove some services to scale down the footprint."

With mBedded Developer, the toolkit for mBedded Server, development teams get an integrated environment based on the J2EE platform with HTML, XML and Wireless Markup Language (WML) support and based on the Open Project idea that allows third-party vendors to extend the functionality of the development environment. ■

CENTER OF ATTENTION



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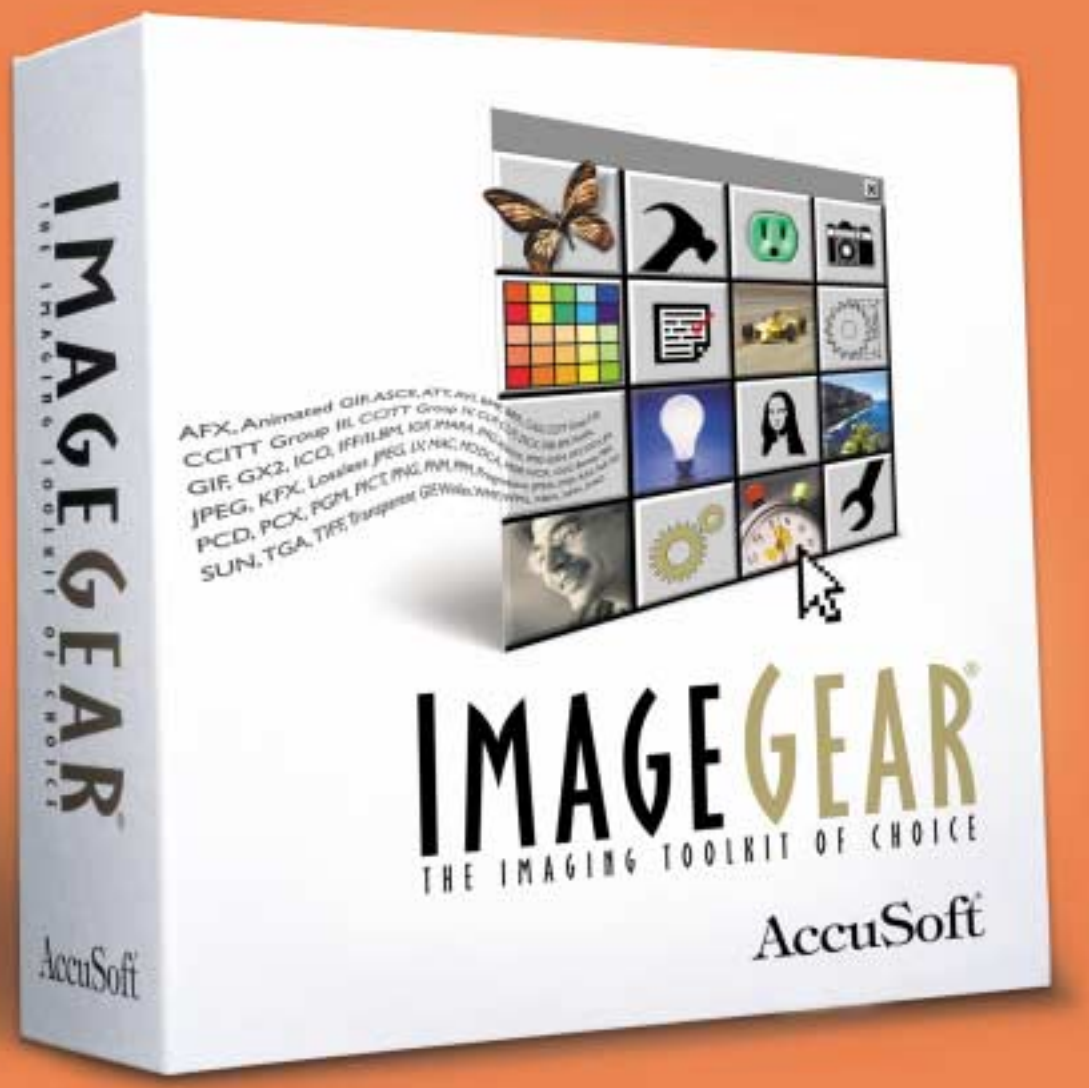

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LINUX

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system for mission-critical applications, you're wasting your time," he said. Due to its slow response times, the platform is less than ideal for applications requiring split-second decisions. "If you move Linux into industrial areas, automotive control or aerospace, Linux advantages disappear," Ghafari said. "But it's good enough for what we are trying to use it for."

Also helping to drive home Fogelin's point was Michel Langlios, director of Internet services architecture at Cisco Systems Inc. Langlios was head of the development efforts behind Cisco's Internetwork Operating System, or IOS, the proprietary embedded system that powers most of today's Internet. "Our ability to forward packets was critical to the network economy," he said, "but we couldn't find an operating system that was [able] to do that, [so] we developed IOS."

Today there are many solutions around which to build devices, and Langlios said he would do some things differently if given the chance. "If I had to start a company right now, I would probably go with a commercial operating system," explaining that such products provide stable code and an "ecosystem of solutions." He believes that companies in this space should not spend money on the infrastructure, but instead should focus on bringing their particular value-add to the equation.

To bolster his argument, Langlios described some of the resources necessary for Cisco to maintain its IOS, including 2,000 software engineers, about 50 of whom focus on the kernel. He pointed out that although critical to the system as a whole, the kernel represents only about 10 percent of the total code base, changing relatively little compared with the feature set that sits atop it.

Yet companies continue to develop Linux kernel extensions in an effort to reduce response time and to shoehorn the platform into applications for which it was never intended, "and that's very much anathema to the open-source movement," said Wind River's Fogelin. One case in point is Coollogic, which boasts system extensions that reduce its CoolLinux kernel response time around 10 microseconds. "If you're looking to build a cell phone," he said, "there's absolutely nothing in [Linux] that you can leverage at all."

"If you really want to maximize your time-to-market," said Cisco's Langlios, "what Wind River, or QNX or Windows CE provides is usually more than just the kernel; they usually have a bunch of application partners, so you don't have to reinvent everything yourself."

Common to both Linux and commercial operating system providers is an umbrella of services—including development support—designed to help customers achieve their desired goals and bring products to market quickly. What Wind River brings to the table is a cautious embrace of open-source technology, with a generous helping of due diligence. Fogelin said that when his company integrates a piece of open-source software into its proprietary RTOS, "we take a slice of humble pie and say the job's not done; we still have to port it across this matrix [of hardware]; we still have to wring out some of the desktop bad practices that are there and make this [part of a] true embedded operating environment." ▮

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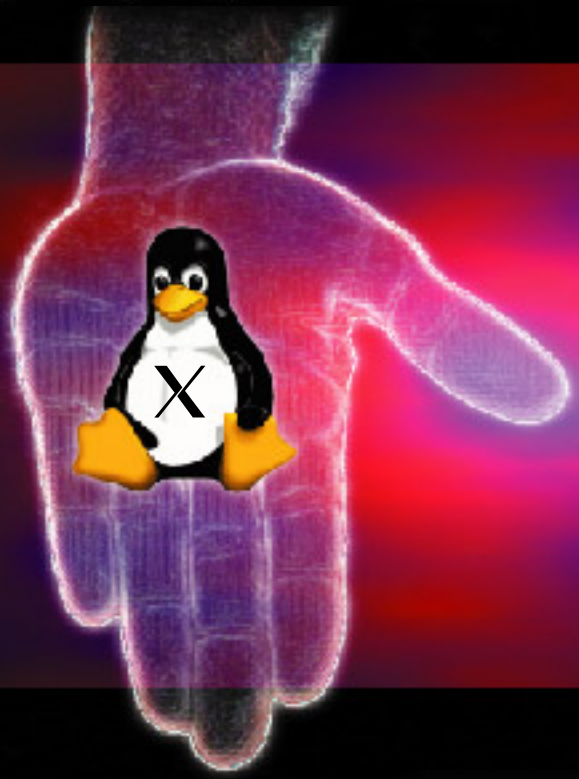

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EDITORIALS

Work Smaller, Not Harder

Computers—they ain't what they used to be. Only a couple of years ago, the difference between a standard business computer and an embedded system was cut and dried. Today, with standard operating-system vendors vying for their piece of the connected appliance market, it's hard to tell.

Consider Microsoft's push into the embedded space with Windows CE, Windows NT Embedded and the new Windows for Express Networks; even Windows 2000 plays to the Internet appliance space, as evidenced by IBM's new Netfinity A100 Web server.

Or consider all the activity around embedded Linux, the latest example of which is Red Hat's embedded configurable operating system, Red Hat eCos 1.3 (see story, page 13). Even Novell is playing to the thin-is-in audience with its Internet Caching System, a customized version of NetWare for cache server appliances.

What does this mean? Opportunity. And not just for the OEMs manufacturing the appliances, but also for enterprise developers open to building applications on new hardware/software platforms.

In field offices, or for dedicated applications, appliances can be less expensive to purchase, deploy and manage than standard servers. Because their operating systems are optimized for a specific set of functions, they're likely to prove more stable and predictable. Yet, developers will find that there's no learning curve and no need to buy new developer tools, because they use the same APIs and application models as conventional servers built on those same operating systems. They also can be more easily integrated into the IT infrastructure than traditional embedded systems.

Maybe your project's requirements can be met by an Internet appliance. Then again, maybe not—but as appliance technology goes mainstream, and the choices mature, you now have more options.

Beware of Moonlighters

Many organizations support the open-source movement not only through their adoption of products like Linux and Apache within their enterprises, but also by allowing their on-staff developers the flexibility to contribute to open-source projects.

Not only do developers gain the personal satisfaction of advancing the state of the art and of being part of the broader community of worldwide information-technology professionals, but they gain new expertise that, in turn, benefits their employer.

Would corporations be as supportive of their developers' interests in working on outside projects if those projects were managed by a for-profit business?

Asynchrony.com has a plan that is potentially beneficial for independent software engineers, and perhaps lucrative for employed programmers anxious for a little night and weekend work. But is it good for their employer? There will be a temptation for project members to work on Asynchrony projects during company time, as well as to use corporate resources such as servers, workstations, licensed development tools or perhaps even code libraries or components. That would be wrong.

Let's hope that Asynchrony puts controls in place. Before employers have to. ▮

GUEST VIEW

MSPs CAN HELP SMALL BUSINESSES COMPETE

For years, the small- to medium-sized business (SMB) has been at a disadvantage when competing with larger companies in its sector. The relative lack of size, revenue, budget, resources, distribution channels, marketing power and installed base has limited the ability of SMBs to grow beyond boundaries dictated by these traditional constraints.

Thanks to the advent of the Internet-based e-business, SMBs have the ability to compete more effectively with their larger competitors. E-business is transforming the fundamental processes and perspectives that govern success in an information-intensive marketplace. SMBs can now be more successful because of the advantages e-business offers to them. Important value propositions include:

DALE ALLAIRE

- Access to a vast marketplace created by the connectivity of the Internet.
- Access to an array of value-added online services, such as procurement, customer relationship management and shipping, allowing SMBs to build a strong Internet presence quickly.
- Reduced costs in reaching electronic customers.
- Reduced customer support costs with improved customer service delivery.
- Innovative Internet-based marketing campaigns.

MSP: NEW KID IN TOWN

One new entrant focusing solely on IT management is the emerging management service provider (MSP). The MSP is offering an innovative new solution that delivers infrastructure monitoring, reporting and security features, all within a single subscription-based service. Perhaps most important, the MSP is keenly focused on the SMB. Rather than forcing the SMB to make an "either-or" decision on outsourcing its entire infrastructure management solution or taking on the resource-intensive and cost-prohibitive task of building it in-house, the MSP offers the SMB choices based on complementary roles and shared responsibilities. The SMB and the MSP both have defined roles, which offer the value of outsourcing and the protection of retaining infrastructure control.

The MSP becomes the provider of detailed management information and recommendations. The SMB is a monthly subscriber to this information flow while retaining control of its own infrastructure and management applications on-site. The SMB uses the recommendations provided by the MSP to alter and adjust the infrastructure to maintain the availability and service quality it desires.

As the provider of IT infrastructure information and recommendations, the MSP creates an infrastructure consisting of various monitoring, reporting and security applications, which provides the SMB with a solution that collects, integrates, analyzes and distributes—via a Web-based portal—specific, actionable information to the SMB subscriber. Some of the principal functions being offered by full-service MSPs include:

- On-site application hosting services. The MSP will host valuable monitoring, reporting and security applications directly on the customer's site providing optimal application access and maximum information control while lessening the user's dependency on the Internet to facilitate "on-demand" access.

JOHN MCCONNELL

- Remote services. The MSP collects operational information from the SMB's IT environment, offering to the customer detailed historical trending and vertical benchmarking reports. The MSP also provides dynamic application upgrades and system maintenance through remote connectivity. The SMB's management information is sensitive, and the MSP must treat it accordingly. Authentication procedures validate the identity of the MSP before any information is exchanged, and the information is encrypted to protect it in transit. The MSP must use data-collection techniques that place minimal loads on the SMB network and do not interfere with normal operations.
- Data management. Collected information from the SMB is processed for real-time service-level tracking and is stored for historical analysis of trends and provisioning.
- Analysis. The MSP uses the most effective correlation engines, expert analysis and other tools to quickly pinpoint potential problems and generate the specific recommended actions for the SMB to take. Continual monitoring provides the feedback that verifies the effectiveness of the actions.
- Reporting. The MSP enables the SMB with a host of enhanced reporting capabilities designed to provide the SMB with a wealth of information about its IT operations, problems and service levels. The SMB uses these reports to assess compliance, for planning to accommodate future growth, and to optimize its internal operations.

The beauty of this innovative new service architecture is that it allows the SMB to retain total control of its own management information resources through a unique on-site hosting model while using the expertise of the MSP to assist it in remote system upkeep as well as day-to-day and strategic management operations. The SMB simply provides the MSP with access to its operational data using a highly secured connection through its firewall. The MSP provides the SMB staff with detailed recommendations pertaining to their IT environment so the SMB is saved the expense and effort of finding experienced, highly trained staff to handle operations.

The management service provider model is beginning to gain significant industry attention because it addresses a critical need for the SMB. However, as with any new market, there are multiple variations of the same apparent theme, in this case the MSP. And as you might expect, different approaches will yield different value to the SMB. ▮

Dale Allaire is director of corporate communications at Silver-Back Technologies Inc. and can be reached at dallaire@silverbacktech.com. John McConnell is president of McConnell Associates Inc. and can be reached at 303-444-8908.

GUEST VIEW

GOING DYNAMIC

A few years ago, if I had sat down to write my opinion about what's going on with the Web, my task would have been simple. From the technical side, there wouldn't have been too many complicated techniques to explain. From the user's standpoint, the whole Web experience was new and promising but relatively straightforward. I probably would have made some general comments about the limitless potential of the Web as a medium for disseminating information, and left it at that.

After all, think back to those early Web sites. They were what we now call static Web sites, meaning the pages displayed the same information—regardless of who was looking at them—until a Web developer changed them. When we visited a Web site, we could go from one page to the next by following links, but when we returned to the first page it would look exactly as it did when we left it.

As you can imagine, it was relatively simple for Web developers to test these static Web sites: check the links for proper navigation; validate the HTML for proper display; correct misspelled words to avoid looking sloppy; and perform load testing to ensure that the site could survive a large number of hits.

Static Web sites remain among us, of course, and they continue to serve a useful, if somewhat limited, purpose. If you want to post information in a location that is accessible 24 hours a day, seven days a week worldwide, you can post it on a static Web site and simply change the content as necessary.

But cutting-edge Web development teams have changed our perceptions of the Web by going dynamic. Dynamic Web sites give Web development teams the power to record user preferences and return pages tailored to those preferences, which means the Web experience can be different for each user. Consider the path that you normally take through a dynamic Web site. When you go from page 1 to several other pages and then return to page 1, the page may look different from that first instance of page 1. As you travel from one page to the next, you carry state based on the path you took to arrive at each page and the information you entered along the way.

ADAM KOLAWA

Sound familiar? That's because this is exactly what happens when you travel through a software application. In essence, dynamic Web sites are actually sophisticated software applications, not mere collections of static pages. The magic of dynamic Web technology is that sites can now contain an infinite number of customized pages.

But there's a complication that goes with this magic. Any software developer can tell you that software applications are difficult to test because they're always changing state. The big challenge is to test all of the possible paths through your application. The same is true of dynamic Web sites, and if you set out to test a dynamic site as if it were a static site, you won't get very far.

Let's face it: Sophisticated applications demand sophisticated testing. Therefore, we should be applying the same effort and technology to testing dynamic Web sites as we apply to testing our software applications. It is no longer enough to test our sites for broken links, faulty HTML code and spelling errors, because the back ends of dynamic Web sites are typically written in sophisticated programming languages such as Perl, C or Java. Back ends might core dump. They might throw exceptions if they are written in Java. Or they might encounter problems in connecting to databases.

Core dumps and exceptions are complicated problems for Web development teams that until recently were most worried about broken links. But never fear: The tools and techniques to combat these problems are already well known. For example, Web development teams can use coding standards to prevent errors in the sophisticated languages that make up the back end of their site. They can perform white-box testing to flush out the uncaught run-time exceptions in Java back ends, and black-box testing to test back-end functionality. Teams can apply these techniques whenever they test their dynamic Web sites; after all, the quality standards we all hold for conventional software should be even higher for applications that will be published online for a potentially unlimited audience.

It is interesting to note that as Web sites have progressed from static infancy to dynamic adolescence, there has also been a transition in the Web development work force. Once upon a time, companies simply trained writers and graphic artists to use HTML code so they could create and maintain corporate Web sites. Now that Web technology has gotten more complex, companies have had to hire true programmers for their Web development teams. Companies that do not rearrange their management and work force during this transition are likely to find themselves with the wrong people performing the wrong tasks on a Web site.

Of course, the increasing sophistication of Web sites is not an excuse to lay off writers and artists and replace them all with top-notch programmers. Dynamic sites require input from a wide variety of specialists, and there are several technologies simple enough for nonprogrammers to learn and use. Indeed, there are many options available to Web development teams who want to make the move to dynamic technology. Choosing the right technology depends as much on personnel as it does on what a company wants its site to do.

Suffice it to say that dynamic Web sites are serious software applications. Be sure to treat them as such when you apply testing techniques and assign personnel, and you will surely reap the many benefits of distributing your powerful applications over the most accessible medium in history. ■

Adam Kolawa, Ph.D., is chairman and CEO of ParaSoft. Reach him at ak@parasoft.com.

LETTERS TO THE EDITOR

IMPROVING THE PROCESS OF DEVELOPMENT

Just when I thought I'd never read a print publication again, along comes *SD Times*. Just as Ted Bahr's opinion piece "Is Bigger Better?" [Feb. 23, page 21] pointed out that there is a balance point between under- and overstaffing development projects and under- and overusing suites of development tools, so too is it that a biweekly newspaper about software development management issues strikes a valuable balance between the cacophony of the Web and full-spectrum newsweeklies and the unresponsive and platitude-filled morass of monthly programming magazines. An added delight is to see that although your paper is brand new, you've secured some of the most talented writers in the development profession—the names of Andrew Binstock and J.D. Hildebrand are especially welcome to those of us who remember a time when periodicals were the most trusted source of advice about improving the software development process.

Larry O'Brien
Vice President
Research & Development
iMind Education Systems

CHANGE-MANAGEMENT NEED IS EVERYWHERE

I just wanted to drop a line to give "kudos" on your new publication. I found a number of articles very interesting and helpful. The April 1 piece by Richard Doerr ("Competitive Advantage in the New Economy," page 16) addresses a very important need for change management, not just in a fast-paced environment—who isn't fast-paced?—but also in environments where there are multiple and sometimes conflicting priorities and stakeholders.

I look forward to future editions!

Maria Umbach
Vice President
Life Product Illustrations

CORRECTION

In a story in the April 1 issue, Wind River Systems Inc.'s Tornado integrated development environment was inadvertently credited to another company.

WHAT DO YOU THINK?

SD Times welcomes feedback. Letters must include the writer's name, company affiliation and contact information. Letters may be edited for space and style and become the property of BZ Media.

Send your thoughts to letters@bzmedia.com, or fax to 516-922-1822. Please mark all correspondence as Letters to the Editor.

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NDS Gets Real-Time Event Tracking

BY DOUGLAS FINLAY

Novell Inc. has partnered with Talarian Corp., to incorporate SmartSockets, the company's real-time notification technology, into Novell Directory Services (NDS). According to Novell, application developers will no longer be required to write application-specific messaging at each server if they wish to be vigilant about detecting any network changes.

With SmartSockets technology now available for Novell's Directory Services version 5.2.2 for the Linux, NT and Solaris systems, network administrators will be able to receive immediate notification of changes to applications such as security, policies and new user moves/adds/changes to ensure proper or immediate response. Application developers can download SmartSockets for free at www.developer.novell.com.

Dave Huntbach, development team leader for Novell Event Services, said that with the current NDS infrastructure, "it has been difficult at best to find out things that are taking place in the directory." He maintained that understanding all the things that were going on in the network, such as changes to policies and changes to security, would require writing specific, local applications at each server to keep track of them. But, he said, "there are thousands of computers on the system, and we'd have to be all over it" to keep track of every changing event.

"But with SmartSockets, an application can subscribe to subjects such as security and policies that indicate when a change has occurred within the directory, and notify the user immediately of those changes," Huntbach said.

SECURITY ISSUES

For example, Huntbach said, security is an issue "rife with opportunities" to use the publish-and-subscribe structure residing under the hood of SmartSockets.

"If someone is trying to audit access to the system, right now those events are emitted from the directory" through local call-backs. He said that if security events were to be caught and tracked, "we'd have to physically be where the event is on the network." But with the publish-and-subscribe model, he said, the user writing a security application could "subscribe to a log-on failure and simply wait until the publisher publishes information into the system and it's routed to the application."

In addition to cutting development time for developers, SmartSockets is easy for developers to use, Huntbach said, because "they can work on application and solution logic that earns money, rather than work on communications infrastructures."

Huntbach further added that SmartSockets will enable developers to extend their reach to collect information from distributed systems such as the NetWare Directory without writing message services for that event at each network server.

He said SmartSockets real-time notifications will be available for the NDS Event Publisher for the NetWare platform in late summer. ■

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News Briefs

PRODUCTS

◂ continued from page 8

claims, while allowing the developer to use objects developed in 3GL environments as components in Omnis applications. Also, Omnis Studio and WebClient will be included in Caldera System Inc.'s **eDesktop** release, the result of a licensing agreement between the companies . . . ComponentSource, an online marketplace for COM, EJB and CORBA components, will make available several products from Visual Numerics, including the **IMSL Libraries**, which are prebuilt mathematical and statistical components for FORTRAN and C++ developers; **PV-WAVE**, a family of desktop visual data analysis tools; **JWAVE**, an enterprise visual data analysis tool; and **INVIZION**, a customizable time-series analysis application . . . Viador Inc. has made its **Viador E-Portal Suite** available for Linux . . . StarBase Corp. has released **StarTeam Enterprise 5.0** for the Solaris operating system . . . The **SilverStream Application Server 3.0** is available from SilverStream Software Inc. Based on the Java 2 Enterprise Edition (J2EE) platform standards, SilverStream said version 3.0 provides a comprehensive set of integrated development tools and J2EE technologies, including Enterprise JavaBeans, servlets, JavaServer Pages, JDBC 2.0 and others, as well as support for CORBA 2.3 and XML. Also embedded in version 3.0 is the JBroker object request broker, which provides technology support such as RMI/IIOP and Portable Object Adapter for building Web applications that comply with the latest J2EE and CORBA specifications, the company said. The Developer Edition for teams of up to five sells for $2,500. The Enterprise Edition for Windows NT, Solaris, IBM AIX or HP-UX is licensed for unlimited users and starts at $15,000 for one CPU . . . Neoware Systems Inc. introduced **NeoLinux**, the first embedded Linux distribution designed specifically for B-to-B information appliances, the company said. The system is based on Official Red Hat Linux, and is designed to power such appliances as cash registers, firewalls, routers, interactive Web kiosks, security devices, thin clients and wireless appliances, the company said . . . Lutris Technologies is providing for the first time technical support, documentation and training for **Enhydra 3.0**, the company's open-source Java/XML application server. Users get the benefits of open-source Enhydra plus the security of deploying a tested, Lutris-certified product, the company said.

PEOPLE

THOMAS

TurboLinux Inc. has made two key changes in its executive team. **T. Paul Thomas** will assume the role of president and chief operating officer, and **Robert Bowe** has been named chief financial officer. Thomas has more than 15 years of experience in IT management, most recently serving as president and CEO of Artisoft Inc. Bowe is the former CFO and corporate controller at Network Equipment Technologies and has served in controller and finance positions with Software Publishing Corp., Coopervision, Xebec, California Microwave and Envirotech . . . Symantec Corp. has named **Gail E. Hamilton** senior vice president of the company's Enterprise Solutions Division. Hamilton has extensive experience at both Compaq Computer Corp. and Hewlett-Packard Co. . . . **Dave Walker**, former vice president at Sun Microsystems Inc., will join Storm LLC, a provider of performance management solutions for mission-critical systems, as its president and chief executive officer. Walker was with Sun for 13 years . . . PeopleSoft Inc. has named industry veteran **Michael P. Gregoire** senior vice president of PeopleSoft Consulting. Gregoire spent 12 years at Electronic Data Systems Inc., where he was executive director for the Global Financial Markets Group . . . **Charles O. Hixson** has joined BEA Systems Inc. as vice president of sales for the central U.S. region . . . Adobe Systems Inc. has promoted **Bruce Chizen** to president as part of a restructuring of its management team. Other promotions include: **Shantanu Narayen**, senior vice president of product development; **Melissa Dyrdahl**, senior vice president of corporate marketing; **Bryan Lamkin**, senior vice president of product marketing, professional publishing solutions; **Kyle Mashima**, vice president of strategic development; and **Joe Eschbach**, vice president, Adobe ePaper solutions. ▮

ILOG BRINGS BUSINESS RULES TO ORDER

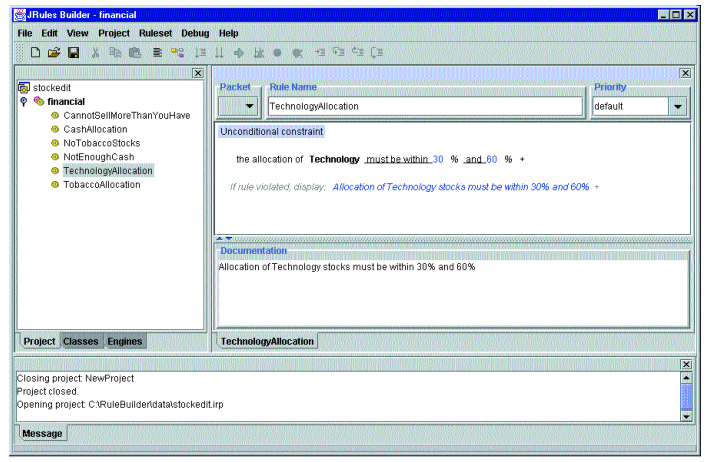
Java engine takes rules out of hands of programmers

BY DAVID RUBINSTEIN

In the bricks-and-mortar world, when a customer went into a shop to make a purchase, there was a clerk on hand to help with choices, sale information, size availability and the like, as well as actually perform the sales transaction. In today's e-commerce world, there is no human intermediary so software must act intelligently to provide those same benefits.

To that end, ILog Inc. (www.ilog.com) has developed a business rule engine, JRules 3.0, that puts a company's policies and procedures into the hands of nonprogrammers with more knowledge of customer needs.

JRules 3.0 accomplishes this, according to ILog marketing director Bill Scull, by providing a custom editor GUI that walks users through the process of rule creation and modification. "This puts rules tweaking into the hands of people who need it; the marketing people, the [human resources] people," Scull said. "The development team can create these custom editors to allow the business people to work on the rules."



Business rules can be written by business people with JRules 3.0.

Among the features included that Scull said speed rule deployment and improve performance are JRules Builder, an integrated graphical development and debugging environment for business rule applications; complete integration with Enterprise JavaBeans; XML rule representation, which allows rules to be generated and processed using standard XML tools; and automatic integration between the rule engine and relational databases. This greater functionality, Scull said, will allow for the quicker development of more mature applications.

Business rules also are important for Web personalization, Scull explained, because rule engines can match a customer's tendencies with a site's content, such as product offerings. "Instead of a sales clerk, it's the software that is the face an Internet customer sees," Scull said. "B-to-C businesses can make themselves stand out by creating a very personalized experience for their visitors." For B-to-B businesses, he said, the rule engine will improve customer care, billing and supply-chain management and fulfillment.

JRules 3.0 is expected to be available in May for Windows NT/2000, Solaris, HP-UX and Red Hat Linux. A development license starts at $7,000. ▮

IBM Extends VisualAge for E-Business

Partnership with Versata extends VisualAge, WebSphere

BY ALAN ZEICHICK

When it comes to building e-business applications, the battle cry is "Do it faster!" IBM Corp., working together with e-business automation developer Versata Inc., believes it has just the right tool, in its VisualAge Application Rules, previewed late March at IBM's WebSphere 2000 user conference.

Application Rules is a suite combining elements of IBM's WebSphere Application Server and its WebSphere Studio developer's kit, plus the company's VisualAge for Java integrated development environment, with Versata's E-Business Automation System.

According to IBM, VisualAge Application Rules automatically generates 90 percent of the code for e-business applications, allowing enterprise developers to focus on coding the business logic.

"VisualAge Application Rules is a comprehensive development environment that can enable customers to quickly develop B-to-B applications and seamlessly deploy them in a WebSphere environment," said Paraic Sweeney, vice president of business transformation in the IBM Software Group, in a statement.

The Windows 98/NT-based development environment, designed for rapid application development, uses both wizards and code editors to allow the definition of business rules as JavaBeans, Enterprise JavaBeans or Java Servlet components.

The Application Rules runtime engine integrates with IBM's WebSphere Application Server Advanced Edition to process the business rule components. IBM has announced runtime versions for Windows NT/2000 Server, AIX and Solaris.

According to IBM, VisualAge Application Rules will be available in the summer; pricing had not been set by press time. Additional information can be found at www.ibm.com/software/ad/varules.

Versata (www.versata.com) changed its name from Vision Software Tools Inc. in January. Its E-Business Automation System consists of three components: Versata Logic Server, an application server that hosts business rules written in Java; Versata Studio, the development tool for creating the business rules; and Versata Connectors, which connect the Logic Server to IBM's DB2 data system.

The Oakland, Calif.-based company went public in early March. With total sales of $13 million over the past 12 months, and a loss of $21 million, Versata, which trades on Nasdaq under the symbol VATA, has a market capitalization of $2.55 billion. ▮

CASTING A GLANCE INSIDE THE CODE

Visualization tool suite upgraded for Oracle app parsing

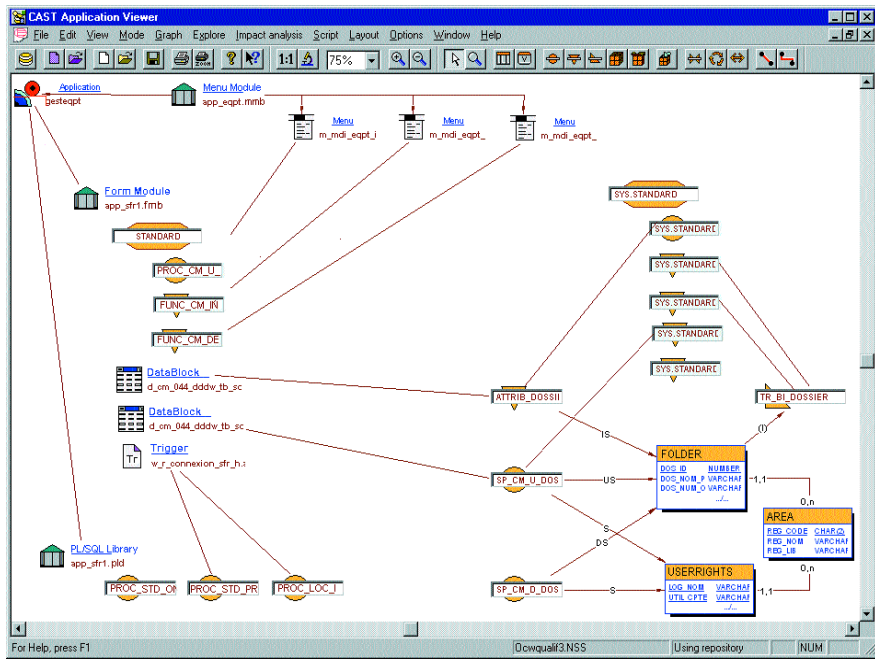
BY DAVID RUBINSTEIN

Adding functionality to its graphical code analysis package, Cast Software has released Forms Analyzer for parsing Oracle applications at any point of their life cycle: development, maintenance or evolution.

At the core of Cast's package is AppViewer, a visualization tool that can be applied to applications using T-SQL from Microsoft and Sybase and PL/SQL from Oracle. Cast then provides analyzers to target specific programming languages. VB (Visual Basic) Analyzer and PB (PowerBuilder) Analyzer have been available, while e-Analyzer (for Web-based languages) was released in February. In addition, Cast (www.castsoftware.com) sells Impact Analyzer, which allows development managers to see the impact of a change on other objects within an application.

"We provide a visual representation—kind of like a medical X-ray—of all things going on inside an application," said Dan Blanchard, marketing manager at Cast. "You get a visual picture of all objects inside an application and how they work with each other."

Blanchard said the package can be brought into a project during development, at which time managers can see the implications of future steps while reverse-engineering to find any problems; during maintenance, as the visual presentation allows managers to see what is happening when the application runs; or during an upgrade cycle, when a developer unfamiliar with the original code can graphically see the steps taken during original development and accept or change them.



The Cast AppViewer provides a graphical look at applications.

"Applications are becoming so big and complex that making changes can be dangerous," Blanchard said. "You must know the interdependencies. We report them, across different tiers, in a visual way."

The analysis package comes as a bundled suite, with pricing varied according to user seats and level of complexity of the project. A set of tools that includes a debugger, code editor and release management tool also comes in the bundle, Blanchard said. ▮

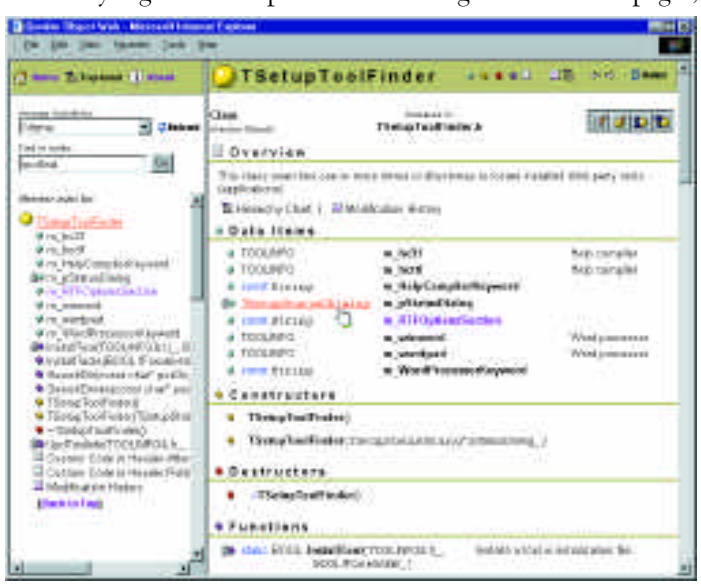
A Surfin' Safari With Surveyor 4.5

Genitor's code-to-Web tool puts documentation within easy reach

BY EDWARD J. CORREIA

Having trouble getting timely progress reports from your software development team? Surveyor 4.5 from Genitor Corp. analyzes C and C++ source files and automatically generates documentation in HTML format for immediate Web publishing, allowing managers to track development progress through a browser.

Surveyor gives development teams a way to document and review individual code files or entire projects, and can chart relationships between objects, according to the company. "Surveyor lets you take an existing code base and without any change to it, analyze and produce this Web site of documents," said F. Andy Seidl, vice president of development at Genitor (www.genitor.com). "In the generated Web pages, the 'Edit from the Web' toolbar lets you jump directly from any item that's documented in the Web to the appropriate file and line number and header and/or source file in your chosen editor, be it [Microsoft's Visual C++] or CodeWriter or whatever you happen to like." This gives developers an easy way to navigate through a project and also can help new team members get up-to-speed quickly, he said.



Surveyor 4.5 turns C and C++ source code into linked Web pages.

Genitor began offering Surveyor in January 1999 as version 4.0 but did not have a "seriously usable version" until the release of version 4.1 about a half a year later, said Seidl, who described version 4.5 as mature. "It really just lets you surf your code," he said.

New features in version 4.5 include integration with Microsoft's Visual Studio development suite, source list color-coding and automatic Web updates.

Seidl differentiates Surveyor from similar code analyzers because of its lack of programmer restrictions, claiming that code writers do not have to change the way they write code or learn new tagging schemes to use Surveyor. "Others require that you put in special comment tags, and they run through the code and extract the tagged text and assemble it into a document," Seidl said. "We don't require anything. We parse the code and assign comments to the code elements so you can take existing code and use [our] tool on it." But if desired, he added, Surveyor users have the option of using special tags to control Web page attributes, such as text style, color and embedded graphics.

No special tagging is needed, said Genitor's Seidl.

Surveyor does not require a full compilation set in order to analyze code, Seidl said, and it is compatible with Java document comments.

Surveyor 4.5 is available for Windows 9*x* and Windows NT/2000 and is priced at $299 for a single user. Upgrades cost $99. Multiuser pricing starts at $1,327 for five users. Support subscriptions cost $89 per user. ▮

Cobalt Acquires ChiliSoft

Cobalt Networks Inc., which manufactures and sells a line of thin Internet server appliances, has agreed to acquire ChiliSoft Inc., a provider of software that enables Web developers to build dynamic Internet applications that work across different platforms. The all-stock transaction is expected to close by midyear.

ChiliSoft's strategy has been to bring Active Server Pages (ASP), Microsoft's specification for the generation of dynamic HTML content, to non-Windows NT platforms and Web servers. The goal, it says, is to allow developers to use the same ASP code on multiple platforms and servers, such as Web servers from Apache and the Sun-Netscape Alliance, whether they're running on Windows NT/2000, Linux or Unix operating systems.

ChiliSoft's ASP technology will be integrated with Cobalt's RaQ server platform line, allowing Cobalt (www.cobalt.com) to offer dynamic Web sites that can be developed using Microsoft's Web development tools. "Cobalt is a server appliance vendor," said vice president of marketing Kelly Herrell. "It's a shift, where the attention is not just on the box, it's on the application that's being delivered. ChiliSoft broadens the application base that can be deployed on the Cobalt server appliance."

"By integrating ChiliSoft Active Server Pages technology with Cobalt's server appliances, we believe we will bridge the gap between Microsoft development tools and the Linux operating system," Stephen DeWitt, president and CEO of Cobalt, said in a statement, stating that since Microsoft's Web tools are among the most commonly used tools in the developer community, the acquisition will allow Cobalt to share in the pool and expand the number of solutions available to service providers using its servers.

Cobalt will acquire 100 percent of the privately held ChiliSoft (www.chilisoft.com) in exchange for 1.15 million shares of Cobalt stock. ▮

-only solutions can add some latency,
oding usually happens in a user-
telephone cards
the encoding,

This means whenever we use the access list "MyMarty" in the configuration file, we want to specify the host 133.133.1.2 and the network 133.133.2.0. The /26 and /32 are the number of bits in the bit mask of the IP address. The predefined access lists in KIRA 3 are
dwin, Localhost and Localnets.

addresses pertinent

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HELP DEVELOPMENT SUPPLEMENT

You Can Raise Your Application's Usability Without Writing Any Code

Do you want to raise the usability of your applications without having to write any code? A high-quality, full-featured Help system is the answer.

It's been said that an application can never be better than its Help system. But for some development teams, the user assistance that accompanies their application is an afterthought. They assume that their code can stand on its own and that the application's interface is so easy to use that additional Help and assistance for their users isn't really necessary.

> "RoboHELP will end up saving at least 6 months of manhours over the planned 18-month lifecycle of our project."

However, this is definitely not the case! Studies show that 80% of end users use the Help system and printed documentation when learning a new application, making the Help and documentation critical to overall usability.

If you want to improve the quality of your Help and documentation, then you'll want to take a look at RoboHELP. It writes all of the Help file code for you. Despite all of the changes in Help formats in recent years, RoboHELP Office remains the industry standard in Help authoring.

"We chose RoboHELP Office for its superior reputation and industry standard Help authoring capabilities. RoboHELP will end up saving at least 6 months of manhours over the planned 18-month lifecycle of our project. Our senior level management personnel have been more than impressed with what's been delivered and they're very excited about the possibilities of our finished product," said Steve Winnicki of American Pad & Paper Company.

RoboHELP's powerful functionality makes creating a full-featured Help system fast and easy. In fact, it's used by developers at companies like Symantec, Intuit, Adobe Systems, Hewlett Packard, General Motors, Johnson & Johnson, American Express and many more organizations of all sizes.

RoboHELP is a first rate tool for authoring all Help formats, including Microsoft HTML Help and WinHelp, Sun's JavaHelp, and Blue Sky's WebHelp. It even generates printed documentation directly from your Help project for manuals, tutorials and training guides. Check out RoboHELP Office 2000 for yourself. The latest version is packed with tons of new features.

■ **RoboHELP Office 2000**, Blue Sky Software, La Jolla, California, 92037 800-796-8459, www.blue-sky.com

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If you want to start creating HTML Help systems now, then take advantage of a unique offer from Blue Sky Software.

They're giving away a free HTML Help Authoring Starter Kit to developers, technical writers, documentation specialists and anyone else who wants to learn how to create HTML Help.

Valued at $499, the starter kit contains a free 15-day license of RoboHELP 2000 for Microsoft HTML Help, an industry report on Help authoring and a sample WebHelp file.

FREE HTML Help Starter Kit

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Speed Up Help Development by 50%
Safelite Reveals How with RoboHELP

Safelite AutoGlass Corporation, America's largest supplier of auto glass replacement and repair services, chose RoboHELP to create their HTML Help.

"In half the time it took to develop a Help file with Microsoft's HTML Help Workshop, RoboHELP enabled us to convert the file, spruce it up with extensions, and make it more visually appealing," said Gerald Mindek, product development analyst at Safelite.

> "RoboHELP enables our designers to learn and begin Help creation more quickly than with any other products we have seen."

The first reason Safelite chose RoboHELP was because of its capabilities. "RoboHELP has such great flexibility when it comes to creating and designing Help files. RoboHELP's single source feature and HTML Help generation enabled us to be less concerned about what format a Help file should be in," he added.

"If we need to create HTML Help or printed documentation, but the current Help is in WinHelp, this is not a problem thanks to RoboHELP's single source features. Secondly, the interface provided by RoboHELP to create and design Help files is impeccable. RoboHELP enables our designers to learn and begin Help creation more quickly than with any other products we have seen. The availability of commands with keystrokes and in menus is great, the organization is intuitive, and RoboHELP's own Help file is very informative," Mindek said.

THE SECOND TIER

The industry's agog with the three-tiered approach. Nearly every vendor sells solutions that are based on that architecture, and that are compatible with every industry buzzword. Nearly every publication (including *SD Times*) promotes the *n*-tiered approach. The standalone application is dead; client/server is dead; long live three-tiered computing!

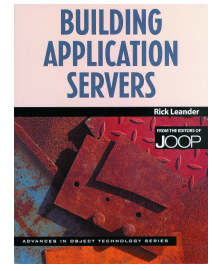
The first tier in a three-tiered system, the database engine, is well understood. The third tier, the presentation server, is still an emerging category, with technologies like Microsoft's Active Server Pages or Sun's Java Server Pages providing the power needed to create compelling Web-based interfaces.

BOOK WATCH

ALAN ZEICHICK

What about that second tier, based on the concept of an "application server," designed to process "business logic" encapsulated in "business objects"? What does that app server do? What does that business logic look like? Where do those business objects come from?

If you're confused on that issue, check out Rick Leander's excellent new book. Don't be misled by its title: His "Building Application Servers" won't tell you how to *build* an application server—it won't put you in competition with BEA, IBM, Microsoft, Persistence or SilverStream. But what it will do is tell you what application servers are and how to design, construct and deploy applications built using an *n*-tiered architecture. Even more important, Leander helps you understand the concepts behind the second tier so you can properly manage the process.



Like Gaul, and like a modern software system, "Building Application Servers" is divided into three parts: architecture, design and programming. The first part is unfortunately very short, comprising only 36-odd pages of 403 pages of prose. Leander provides an overview, nothing more, of the differences between a two-tiered approach (aka client/server) and the multitiered approach covered in the rest of the book.

After that quick intro, he provides a few pages discussing what an app server does—particularly, how it uses middleware such as remote procedure calls, distributed objects, transaction monitors or message brokers to enable communication among the presentation servers, the database back-end systems and itself.

The author's expectation is clearly that the reader already has some prior understanding of both the *n*-tiered approach and how middleware works—in fact, he says as much. Assuming that you've been exposed to the basics, Part 1 will serve as a good review of the concepts before advancing to the second part of the book.

Leander gets more serious in the pages discussing *n*-tiered design, properly realizing that in this development model, designing the applications for the app server is all about the business, and business rules, and not about technology. That's why he preaches the gospel of joint application design, where IT and line-of-business managers work hand-in-hand during the whole process, with the results being based on use cases diagrammed in UML. As he says: "It may be easy to get caught up in the design, but the goal of application server design is to create information tools that meet the end user's needs. These people have a job to get done and they often do not share your enthusiasm for distributed objects, transaction servers or message queues."

A good part of this section of "Building Application Servers" is consumed by a thorough sample scenario, that of designing the business logic for a loan-processing application. Leander does an outstanding job walking through the design, from actors to events, and in determining where the objects, methods and attributes lie.

The final section, on writing code for application servers, takes up more than half the book. The examples Leander chooses are based on using Java as the language for the application server, and the RMI (Remote Method Invocation) as the request-brokering middleware. It's a fine choice, but be advised that those using a different language or middleware approach may have trouble relating his examples to their own development projects.

Even so, the examples are excellent. Leander first tackles the job of creating the appropriate classes for the business objects, and then moves swiftly toward tying them to the database back ends, using JDBC and SQL. Next, it's on to the client-side interfaces, from requesting services to passing objects, data and properties between the presentation server and the app server. Finally, there's coverage that's often missing in books on this subject: how to scale applications to handle multiprocessing, concurrent processing and two-phase commit-based transaction monitors.

If you're considering the *n*-tiered approach and feel a little fuzzy on the concept, or if you want a single *practical* book on the subject to supplement the more theoretical books and articles found in the technical journals, "Building Application Servers" is highly recommended. ■

"Building Application Servers." Rick Leander. SIGS Books, Cambridge University Press, 2000. Trade paper, 414 pages. $39.95.

Alan Zeichick is editor-in-chief of SD Times.

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COMING TOGETHER OVER ASPs

In late January, two founding companies in the application service provider business, Breakaway Solutions and Eggrock Partners, merged. This merger, I believe, portends the beginning of a trend of consolidation that is likely to occur in the ASP market and to continue in related services. It is difficult to predict what effects these mergers will have on enterprises that wish to consider outsourcing their applications to ASPs.

The trend toward consolidation makes sense in the whole series of niches that provide services to enterprise-level IT. The earlier echo of this trend occurred in the ISP market. You recall that in the mid- to late '90s, when the Web really took off, there were hundreds, maybe thousands of ISPs—mostly small operations. At present many of these have been gobbled up into larger ISPs, and even the large ISPs have merged.

More interesting is that many of these ISPs have merged with telecom companies. MCI-Worldcom's acquisition of UUnet stands as the notable example in this field, but certainly not the only one. This trend fulfills an interesting prediction made nearly six years ago by Carol Realini, an industry pundit (and later cofounder of Chordiant) who predicted that eventually the utility companies (read the phone companies) would run all the network infrastructure, including the network plant within companies. The vision, as she detailed it, is that you plug your servers and desktops into the wall, much like you would the phone, and the switching and routing is done by the phone companies rather than by the computer room down the hall. This approach has considerable merit, and the continued merging of external infrastructure services suggests that this may be happening.

MIDDLEWARE WATCH

ANDREW BINSTOCK

Consider another industry: the Web hosting business. It doesn't take a genius to see that fairly soon many companies will not be running their Web sites internally—it just doesn't make sense economically. Rather, companies will hire any one of the major hosting services to provide the physical infrastructure (the dual-grid electricity with emergency diesel generators, the plant security, the 24x7 oversight and so forth) and simply hook into these sites through high-speed pipes. This approach is economical and frees up in-house tech experts to do work that adds to the company's unique business proposition.

Reluctance to follow this model echoes an even earlier phenomenon. Before World War II, many large companies ran their own telephone switches. Hard to believe, but true. They had their own phone systems and their own telephone experts maintaining them. By the end of the war, trust in the phone companies (and cost considerations, no doubt) eroded this model, such that today the only organization running its own phone switches is the military.

Likewise, I expect Web hosting, Web access and, of course, the funky business of ASP—the reincarnation of the service bureau concept without the attitude—to really take off. Consider that a company already outsourcing Web hosting and central applications is likely to want the same folks to be running both of these aspects of IT. How much longer until the outsourcer can make the compelling case for providing all IT services save those central to the company's unique business proposition? (Here, retaining software developers for this purpose makes some sense.) I believe this is the wave of the future, but a wave that cannot fully break until ASPs and Web hosting services have the requisite horsepower to support large enterprises. To get there, they must indeed merge.

Already sites today are constructed by outside experts (such as Scient, Viant, USWeb/CKS—now renamed MarchFirst) that often run the sites as well. But since phone companies, especially the new competitors to the Baby Bells—companies collectively called competitive local-exchange companies or CLECs—provide much of the Internet infrastructure already, I see them as the natural center points around which consolidation will happen. The March partnership between IBM and a Denver-based CLEC, Qwest, to provide 28 "Internet data centers" suggests that this trend is already well under way.

The remaining question is, what part will middleware play as this trend accelerates? Will these new, larger ASPs have to provide distributed object services, enterprise application integration or other such services to clients or use it for their own internal needs? What part will middleware play inside the enterprise when much of IT is handled outside? How easy will giant ASPs make it for middleware to cross between multiple ASPs, perhaps each with its own homegrown object models and support schemes? The answers certainly are not clear at present. But watching the trend will start to clarify the role of application development in this, the new enterprise IT infrastructure. ▮

Andrew Binstock is principal analyst at Pacific Data Works LLC. Reach him at abinstock@pacificdataworks.com.

Put the power of Excel on the Web.

Let's face it, using Excel on the Web can be puzzling. Excel can only be used on Windows operating systems, and its desktop-bound architecture prevents it from leveraging advances in database, Web, and application servers that power eBusiness and B2B processes today.

Formula One, however, brings the power of spreadsheets to the Web. It's an API-driven, JavaBean component that enables you to embed an Excel-compatible spreadsheet engine in any tier and construct business rules for data analysis at the core of Java applications, servlets, applets, and JSP.

Formula One's other advantages include:

- **Formula One has a lightweight footprint.** System requirements for Excel 2000 include 146 MB of hard disk space. A Formula One JAR file is approximately 1 MB.
- **Formula One writes files optimized for the Web.** Formula One can save files up to 90% smaller than Excel's in some cases. Formula One can even distribute spreadsheet data in any client environment: HTML for thin clients, Excel for Excel clients, or live spreadsheet-powered applets for "heads down" users who require robust interfaces.
- **Formula One is 100% Pure Java and only requires the proper virtual machine to function.** Excel requires Windows to operate.
- **Formula One is built in the Java programming language and is ideal for widespread distribution on the Web.** Excel and Office Web Components are designed for use behind a firewall and require Microsoft Office to be installed on all desktops.
- **Formula One's architecture and JDBC methods enable it to be used with a wide variety of database and application servers.** Excel can't.
- **Formula One provides a JavaBean and applet with an API of more than 400 properties, methods, and events.** Excel is not an API-driven application and can not be used as a component in a Java application.

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WEB PERFORMANCE: SUM OF THE PIECES

It seems odd, but one of the biggest risks you face with your Web-application development projects is the price of popularity. The mistakes of Victoria's Secret and other sites that buckled because they didn't plan for scalable success should be familiar warnings to us all. But building your applications for speedy response (or even merely acceptable response) under heavy loads is more of an art than an exact science because finding the potential performance bottlenecks can be difficult. In fact, there are three different general approaches to performance measurement; which one or ones you use can determine how you need to adjust your applications accordingly.

THREE APPROACHES

First is the brute force approach, where you ask the IT staff, or maybe your company's employees, to hammer away at a particular URL a week or so before you are ready to unveil it to the public at large. Your hope is that if you tell enough people and they hammer away diligently, you might expose some weakness or potential choke points. A variation is to use a test lab with hundreds of machines capable of creating thousands of simultaneous sessions, such as the KeyLabs facility in Utah, and let them do the stress testing under more scientifically controlled conditions.

Brute force is fine for simple things, but the biggest test lab can only do so much stress testing.

A second method is to use application modeling tools as a substitute. A good example of this kind of approach is with Ganymede Software's Chariot and Pegasus tools. You can record typical Web application scenarios and play them back through your network to determine if these applications will bog down anywhere. These are useful if you don't have too many machines or users available for real-time testing (you can play back streams of multiple users' actions on a single machine), but getting the tool set up can be time-consuming, and the results are complex to analyze. You need to make sure that you indeed tested the right thing and found the actual bottlenecks in your applications and not something inherently wrong with your network—or with your test configuration.

A third approach involves using a third-party company to monitor your applications from afar, over the actual Internet and in real time. Such a "management service provider" is still a relatively new concept, although several companies have been involved in doing relatively crude monitoring for years. Most of these efforts have tested only whether or not a Web server is actually up and running. Ipswitch Software's What's Up, Freshwater Software's SiteSeer and Vertical Software's WebPartner will all send you e-mail or pager alerts when your Web server connection from the Internet is lost. And NetResolve's SiteWatch takes these a step further with more details, such as the number of e-commerce transactions and page load times.

But none of these services truly provides any insights into what your applications are actually doing when they are under the load of multiple hundreds or thousands of users—insights that your team can take stock of, so that the developers can get inside the code to improve the performance of the applications.

There are two companies that are in this new area of management service providers: aptly named Manage.com and Luminate Software. Manage.com monitors mostly e-commerce applications, providing details on transaction throughput and end-to-end metrics that will help you avoid problems if your storefront becomes popular and the virtual aisles become clogged with throngs of cybershoppers.

Luminate's Mango offering got its start monitoring SAP applications on local-area networks and is just now branching out into generalized remote Web application monitoring, including covering popular Windows NT-based Web, Exchange and SQL Server applications. You can track inter-relationships among Web, database and Internet applications using a series of reports, all available via a Web browser.

Both of these companies have the beginnings of a great service. Manage.com is an expensive proposition, befitting more high-end Web storefront providers. Mango, on the other hand, charges only a few dollars per monitored server per month.

CHOOSE AT LEAST ONE

No matter which approach you choose, you still have to spend some time understanding the different pieces of your Web applications and how they all fit together if you are going to plan for popularity. But do spend some time with at least one approach—to do nothing and just assume that because a site's software works correctly under test conditions it's ready for prime time is foolish. ▮

David Strom is president of David Strom Inc. and editor of the Web Informant *newsletter. Reach him at david@strom.com.*

THE PROMISE OF THE LSB

I promised some weeks ago ("A Surprising Open-Source Champion," March 15, page 25) that in keeping with the ethos of the open-source world, I would offer readers an opportunity to contribute—nay, to control!—the direction of this column. Response to that column has already begun to come in.

The first reader to send me e-mail offered this delicate query: "LSB? What the heck is that?" And so we begin.

A BRIEF TOUR OF THE BALKANS

The L in "LSB" stands for Linux, and Linux is based on Unix, so we may as well page back through the log file to the very beginning.

Unix, you may recall, came from AT&T Bell Labs, which in those days sent journals—such as this one—politely insistent letters, over attorneys' signatures, requesting that we call it UNIX. Unix was a good thing; it prospered and multiplied, particularly since AT&T licensed it very inexpensively.

The operating system's widespread adoption turned out to be the problem.

As the operating system was extended and improved by hardware vendors and other bodies, incompatibilities inevitably emerged. Digital Equipment Corp., IBM, Hewlett-Packard, Sun, Silicon Graphics and dozens of other companies all had their own *ix operating systems, and basically none of them could work together. The University of California at Berkeley spawned BSD, an open flavor of Unix that some vendors used as the basis of their implementations. Others used AT&T's code base. Eventually the operating system became the precariously leaning tower of Babel it is today. Oh, there have been attempts to set up API and binary standards, and they have been more or less successful. Combined with a certain attrition in the vendor base, the Unix's balkanization is largely under control. But it's still there, lurking under the surface.

WHAT'S OLD IS NEW

Perhaps this sounds familiar. Linux is now on the verge of the same widespread adoption that Unix suffered. And there is every reason to believe that Linux, too, will fall victim to incompatibility.

The open-source world has a word for the process by which a single code base evolves into two incompatible descendant versions: forking. The word is whispered with horror in the aisles of Linux trade shows. Forking could divide the Linux world into isolated islands of incompatible systems. Every time you acquired a copy of Apache or Corel Office, you would have to specify whether you wanted the Red Hat version or the Caldera version or whatever. That multiplies the effort and complexity required for developers to support the operating system. It makes variants with smaller market shares less viable. It introduces a whole wagonload of undesirable dynamics into the Linux world.

At the center of the open-source world, right at the core, is a relatively small group of visionaries and expert coders whose opinions are respected if not always slavishly followed. People like Eric Scott Raymond, author of "The Cathedral and the Bazaar." These leaders, most of them Unix veterans, anticipated the forking problem. They described it on their Web sites before it ever happened to Linux. They're smart, those guys.

There is even now a modest debate going on. Some believe a little forking is tolerable, especially if it leads to future versions of Linux that are suited for Web-site hosting, embedded devices and the desktop, for instance. Some believe forking is inevitable and that a technology-based solution must be invented. And some banded together to form the LSB project.

A HIT OF LSB

LSB stands for Linux Standard Base. It is a vendor-neutral specification for a virtual minimal Linux implementation. The spec defines those services and APIs that should be provided by every Linux distribution. It is a standard API that programmers can count on.

The idea is that developers and system administrators can assume their applications will work with every Linux distribution if their apps are written strictly to the LSB API. Calls to distribution-specific APIs are allowed, of course, but they will compromise portability.

The LSB initiative is supported by all the major players in the Linux biz: Caldera, Corel, Debian, IBM, LinuxCare, MandrakeSoft, TurboLinux, Red Hat, SuSE, VA Linux, SGI and others. The project's home page (www.linuxbase.org) includes this mission statement: "The goal of the Linux Standard Base is to develop and promote a set of standards that will increase compatibility among Linux distributions and enable software applications to run on any compliant Linux system. In addition, the LSB will help coordinate efforts to recruit software vendors to port and write products for Linux."

If Linux winds up living up to the hype and finding widespread use, the LSB project will have had something to do with it. ▮

J.D. Hildebrand is the former editor of such publications as Computer Language, Unix Review *and* Windows Tech Journal. *Reach him at jdh@sdtimes.com.*

E-MONGOOSE STRIKES QUICKLY

"We've got a new vision," says the CIO brightly. "Both the network and our Web farm will move to Windows 2000. We'll manage all of it with Active Directory, Microsoft Management Console and BackOffice. We'll need you to port all that nasty AS/400 stuff onto Win32 and then build a middleware e-bridge between that and our new e-commerce e-farm, so we can make e-revenues off of our e-customers right away. Oh, one last thing. We'll need it running by the end of next month."

While this is a slight exaggeration, it's *only* a slight exaggeration. Every developer I know has run into situations where management makes up deadlines without taking technical realities into consideration. You can solve part of the problem by marching into the boardroom, breaking out a box of crayons and drawing big flowcharts with pretty colors while speaking reality in soothing tones and using big acronyms. This time-proven technique, however, buys you only a short extension; it almost never gets you all the time you really need.

But that's life, and we have to get used to it, because rapid changes in our front-line business are dictating an ever-faster development cycle. I recently slammed Microsoft a little hard in this regard because of literature it published describing the increased development speed of the still-mainly-vaporous Windows DNA. Basically, the literature claimed that DNA would allow developers to leave "plumbing" and "systems integration" code to DNA and the Windows 2000 operating system, so they could concentrate on developing business logic.

The worrywart in me still thinks that's suicide. Microsoft may have a nice integrated development environment in Visual Studio, but its reputation in the lean-and-stable code generation department leaves much to be desired.

Even more so, the worrywart was concentrating on cross-platform systems integration—tying legacy systems into Windows 2000 e-commerce front ends. Of course, that's really not what Microsoft meant by leaving the systems-integration code to DNA. In typical Redmond fashion, it's still assuming the whole world will run only Windows 2000.

While that may sound arrogant, it's not such a crazy assumption if we think of all the up-and-coming dot-coms, new Web storefronts and application service providers that are popping up like mushrooms. Such organizations reflect a large percentage of new development efforts, and many of them can easily standardize on a single operating system end-to-end, making Windows 2000 and DNA an attractive option. But how can someone use DNA right now? The architecture is complex and still evolving.

The answer is another URL-strained start-up called e-Mongoose Inc., which recently released its Mongoose DNA development environment at the SD 2000 show in San Jose. Mongoose is a toolkit designed to streamline the development process using Windows 2000 and DNA with a special eye toward Web development, e-commerce applications and even that Microsoft thin-client initiative that I love to bash so much.

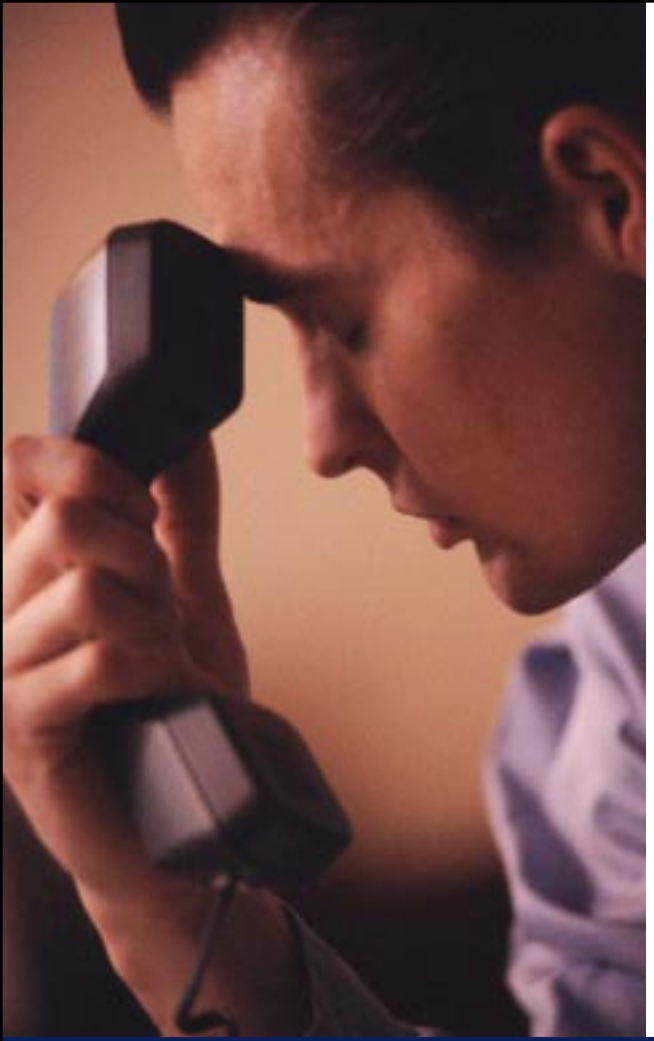
The company has designed Mongoose to work in a three-layered development process beginning with what it calls the "digital foundation." Basically this boils down to an architectural framework tailored toward a database-centric, Win32 e-commerce application—with scalability in mind, of course. Developers can take this framework and tweak it using practically any Microsoft DNA-compatible development tool.

Once the foundation layer has been created, Mongoose serves up its commerce application services. These are prebuilt features you can tack onto your application designed to increase performance and feature sets—all without requiring you to write any code. Naturally, e-Mongoose does allow you to develop your own code and plug it into this framework, but it's got a decent amount of customization available right off of a point-and-click development interface.

The final stage is the Mongoose design gallery, which e-Mongoose describes as a "declarative programming environment that allows developers to quickly develop and publish objects and forms." In practice, e-Mongoose is as good as its word, as "development" in this sense can be almost entirely visual point-and-click and forms-based. And, of course, you can use your own stuff as well, using HTML, JavaScript, ASP and ActiveX.

Is the process foolproof? Heck no, but no development cycle ever is. I'm betting that most Mongoose users (and Windows DNA users, in general) will wind up with fat auto-generated code bases that probably won't run as fast or reliably as they should. But they will get them built quickly—very quickly. And if that time-to-market means the difference between business survival and no business at all…well, there is always time for perfection later on. ▮

Oliver Rist is technical director of Grand Central Network, an Internet consulting company. He can be reached at orist @grand-central.net.



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When the largest corporation in America is found to be engaging in monopolistic practices, as Microsoft was in an early April ruling, the tremors are felt far and wide. Microsoft is the latest in a line of companies since the Industrial Revolution that help Americans define themselves. Steel. Railroads. Telephones. Airlines. Conglomerates. Computers. Sure, Cisco and its shareholders enjoyed their day of being No. 1 in terms of market capitalization. But a company that makes misunderstood routers and switches lacks the cachet, the swagger, to carry the country on its back. "As Cisco Goes, So Goes America" is not a slogan we can expect to hear anytime soon.

MONEY WATCH

DAVID RUBINSTEIN

The hugely negative reaction of the markets to the announcement of Microsoft is a case in point. The decline of the Nasdaq went beyond correction status into the dreaded bear territory, and only started to uptick again slightly as of this writing.

Microsoft is just one company. And Prudential analyst Don Young sees only positives for investors regardless of the penalty imposed, reiterating his buy rating. But since so much of what investors believe about the near future of the economy is tied to the fate of Microsoft, caution and fear have supplanted bravado and machismo as the prevailing moods on Wall Street.

OUT OF THE ETHER

What you now have, of course, is a very volatile market, with great swings occurring several times each week.

Part of the downward pressure on the Nasdaq has come from investors finally applying the tried-and-true measuring sticks to technology issues. The biggest of these, of course, is earnings.

Suddenly, people are worried that dot-coms aren't performing. It's almost as if the investment community that bought into the high-tech hype is making a huge margin call on many of these companies, which now are talking partnerships or wooing white knights in the hopes of staying alive.

Two announcements in early April emphasize this: Mortice Kern Systems Inc., a Canadian concern, will not proceed with proposed primary and secondary stock offerings because of the adverse market conditions. And NaviSite Inc., an application service provider, will not pursue a secondary offering, instead going back to private investors and hoping to obtain commercial lines of credit to raise capital for growth.

A credit line? You mean, pay the money back? Imagine, getting financed and then having to produce! What a concept!

LINUX LOSING LUSTER?

One area in which investors are wondering if they will ever see a return is Linux, which only a few months ago seemed one of the few "mortal locks" in the marketplace. Any company that was involved in Linux, it seemed, could enjoy a huge IPO run-up and big market capitalization.

Yet the slide in the prices of Red Hat, VA Linux Systems and Andover.Net since their IPOs, and the underwhelming (by earlier Linux standards) rollout of Caldera Systems might be the result of investors finally questioning the open-source business model, and wondering how the proceeds from technical support and instructional manuals can hold up the hugely inflated valuations of these companies. Indeed, Linuxcare delayed its IPO because of the stormy climate, and the fact that its CEO Fernand Sarrat quit.

Yet Linux, like lava, finds another channel in which to flow—in this case, the river of embedded systems. Lynx, a Linux company, recently received a cash infusion of between $20 million and $30 million to make its proprietary embedded operating system—LynxOS—work interchangeably with Blue Cat, its version of Linux. In the embedded world, companies reap profits from the sale of the operating system and development tools, a more conventional business model that Wall Street finds more attractive—which for now means more stable.

Then, of course, we must deal with the level of margin buying of tech stocks, which is approaching levels not seen since just before The Crash of '29. People giving up their jobs, day trading full-time, mortgaging their homes for cash with which to play the market…but this is a column for another time. ▮

ON THE INSIDE

Recent activity at Allaire Corp. found board chairman Joseph J. Allaire selling 180,000 shares at between $112 and $130 per share between Feb. 11 and Feb. 25, president David J. Orfao selling 62,774 shares at between $113 and $132 per share between Feb. 11 and Feb. 28, and vice president Jack Lull selling 10,000 shares at almost $130 per share on Feb. 29. About 35 percent of Allaire's shares are owned by insiders. At Computer Associates International Inc., chairman of the board Charles Wang sold 300,000 shares at roughly $71 per share on Feb. 8, while president Sanjay Kumar sold 100,000 shares at $65.01 per share on March 3. CA executive vice president Russell M. Artzt bought 300,000 option-related shares at between $7.59 and $9.07 per share on Feb. 3, then turned around and sold the same number of shares on Feb. 9 at between $70.29 and $71.14 per share. There are 542 million outstanding CA shares, with insiders owning 37 percent.

At Symantec Corp., executive vice president Dana Siebert sold 5,000 shares on Feb. 25 at $65.13 per share, while vice president Keith Robinson sold 8,000 shares on Feb. 25 at almost $70 per share, and then filed a Form 144 that same day to sell an additional 22,241 shares. PeopleSoft Inc. chairman David Duffield sold 2 million shares at an average price of $19.70 per share on Feb. 29, while president Jay Fulcher sold 6,400 shares at $23.81 on Feb. 10 and vice president Craig A. Conway sold 25,000 shares at $24.43 per share on Feb. 12. Insiders own 29 percent of PeopleSoft stock, with 274.8 million shares outstanding. At Citrix Systems Inc., vice president Leslie Pendergast sold 2,689 shares at $105 per share on Feb. 29, while vice president Barry M. Davis sold 4,695 shares at about $95 per share on Feb. 24 and vice president Christopher Phoenix sold 35,000 shares at about $175 per share on Feb. 11.

STOCK WATCH

$2 BILLION-PLUS

Company	Symbol	Close 4/7	Market Cap. (billions)	Shares Out (millions)
Microsoft	MSFT	88 1/2	461.10	5,177.00
Oracle	ORCL	87 3/16	248.10	2,847.00
Sun Microsystems	SUNW	97 3/4	172.60	1,747.00
SAP	SAP	56 5/8	73.48	1,255.00
Computer Associates	CA	61 19/32	33.39	542.00
Citrix	CTXS	82 13/16	14.06	179.20
BMC Software	BMCS	49 1/2	12.03	244.00
BEA Systems	BEAS	98 1/2	11.95	122.70
CompuWare	CPWR	20 13/32	7.32	360.50
Rational Software	RATL	78 3/4	6.84	86.08
Red Hat	RHAT	38 3/16	5.68	148.90
PeopleSoft	PSFT	19 3/8	5.45	274.08
Informix	IFMX	21 1/8	4.15	201.30
Network Associates	NETA	28 1/4	4.08	139.30
Entrust	ENTU	76 1/2	3.98	53.02
Symantec	SYMC	67	3.94	59.12
Cognos	COGN	80	3.28	42.68
RSA Security	RSAS	58 13/16	2.28	39.77

$2 BILLION – $500 MILLION

Company	Symbol	Close 4/7	Market Cap. (millions)	Shares Out (millions)
Legato Systems	LGTO	23 1/16	1,870	84.98
Sybase	SYBS	21 1/2	1,750	81.53
Allaire	ALLR	52 13/16	1,430	26.19
Iona Technologies	IONA	69	1,324	19.45
Baan	BAANF	5 3/16	1,120	214.50
SilverStream	SSSW	132 3/4	1,030	82.50
Serena	SRNA	27 5/16	1,020	25.42
Open Market	OMKT	22 1/4	998	43.86
ILog	ILOG	55 13/16	883	14.40
Marimba	MRBA	36 3/4	861	23.08
Saga Systems	AGS	28 1/2	844	28.93
Interleaf	LEAF	53 7/8	777	13.51
Brio Technologies	BRYO	29 5/8	773	27.54
Cysive	CYSV	66 1/2	741	11.39
Merant	MRNT	25	720	28.80
Viador	VIAD	35 1/2	592	16.46
Be	BEOS	16 1/2	572	34.40
Axent Technologies	AXNT	20 1/8	564	28.00

$500 MILLION & UNDER

Company	Symbol	Close 4/7	Market Cap. (millions)	Shares Out (millions)
Digital River	DRIV	19 7/8	443.0	20.74
Rainbow Technologies	RNBO	33 1/2	406.2	11.46
Inprise	INPR	6 7/8	400.1	57.93
Persistence	PRSW	18 1/8	358.6	19.12
StarBase	SBAS	8	328.0	42.15
Aladdin	ALDN	27	314.6	11.36
Map Information	MAPS	36 3/8	314.0	8.72
Unify	UNFY	17	313.8	18.39
Centura Software	CNTR	8 1/8	296.7	35.42
SCO	SCOC	8 3/8	286.8	35.3
Excelon	EXLN	9 1/4	274.3	28.49
EarthWeb	EWBX	19	178.1	9.76
Fatbrain.com	FATB	12 1/2	123.4	11.42
ISG International	CDSW	6 3/4	87.9	12.55
Rogue Wave	RWAV	7 9/16	79.9	10.48
Gensym	GNSM	8 3/4	49.3	6.16
Programmer's Paradise	PROG	5 3/32	26.0	5.11

HOLD ON, I THINK MY SCREEN IS RINGING

Ubiquity's SIP server brings personal call centers to computing

BY DOUGLAS FINLAY

Got a call you'd rather route automatically from the screen to your secretary or boss? Want your video mail stored until you get back from lunch?

These and other next-generation computer telephony applications are within reach, thanks to the Session Initiation Protocol (SIP), an advanced call-control protocol that Ubiquity Software Corp. has added to its Helmsman Application Services Platform.

Featuring SIP, Helmsman—an advanced Java-based application server running on Linux, Windows NT and Solaris operating systems—improves multimedia point-to-point communications significantly, providing developers with the opportunity to design intelligence, such as a personal call center, into the local desktop environment and to control and administer telephone calls and other incoming transmissions, such as messaging, from the PC screen.

"While the H323 spec allowed multimedia point-to-point communications, it was laden with memory requirements, and was therefore cumbersome," said Ron Fischer, director of product marketing and business development at Ubiquity (www.ubiquity.com). "On the other hand, SIP is evolving to supplant H323 in the IP environment because it has lighter memory requirements and is much more intensive on systems."

Ubiquity, a company providing telephony application services and deployment platforms, is targeting next-generation IP telephony carriers that want to compete against the traditional local-exchange carriers. Next-generation carriers will compete, he said, by adding applications on top of current centrex applications. "Right now," he said, "all centrex allows us to do is make a call, hang up a call, put it on hold and extend it to conferencing," essentially leaving the work to the network.

But, he said, through the SIP server, new telcos would leapfrog these current centrex applications and enable developers to write smart applications at the local, or desktop level, such as voice over the Net and video capabilities. "We're not looking to replace or redo centrex circuit switches, but to take them a few steps further," Fischer said.

ENDLESS POSSIBILITIES

Fischer said developers have a whole new world of possibilities before them in writing smart programs into familiar desktop applications. "Developers could mix and match traditional carrier functionality with smart applications, by writing rules for individual call centers at the screen that take incoming carrier calls to that person and route them to another person or persons designated by the user," or to the user's home phone to be listened to later.

He said small businesses could write vertical applications and call rules that would direct calls pertaining to that application, such as detecting and routing incoming calls for customer service only. He also said developers could take centrex network features and embed them into smart applications.

The enterprise, he continued, would use a server instead of a personal call center to write new rules, enabling calls to be directed within the enterprise. Once a call is directed to that person's PC terminal, the individual call center would determine how to direct the call: to store it, to direct it to another area of the company or to send it to the user's home phone, for example.

Fischer added that the enterprise could further integrate traditional carrier services with e-commerce on the Web, incorporating voice into the enterprise's home page to enable video connections.

Concerning video, Fischer also said that the SIP server could handle messaging such as video e-mails at the personal call center, enabling video to be stored for call-up when the user desires.

However, Fischer said that since the major movement within the telephony market is to enable multimedia end-to-end points to communicate more seamlessly and effectively, SIP servers could take a while to fully penetrate the market, at least until major carriers recognize the benefits of writing intelligent telephony applications at the desktop level and utilize the new resources. ▮

DIRECTDOM

◂ continued from page 1

accessibility, sound and printing functions, meaning that the Weblet run-time library can be used to build Java programs that run inside a browser Web page, or as stand-alone applications.

When developers create Weblets, the interface, written in HTML, is separated from the application's business logic, written in Java. "Take a bank," Donoho said. "People want to access it from cell phones, wireless PDAs or large fat clients. You can't make the interface work on all different size screens.

"But from a server perspective, you want the same business logic," he continued. "Once [the page's logic is] separated from the graphic design, now you can get people to come in and make it look pretty and not leave [the user interface] up to Java developers. Putting the right skills with the right technologies is a huge key to the DirectDom model." With DirectDom, developers can integrate many different technologies, such as Macromedia Flash or Apple QuickTime, Donoho said, creating a multimedia editing platform. "DOM now becomes a platform for innovation."

Another way, according to IBM's Java chief technical officer David Boloker, is to use the browser as the rendering engine, with the DirectDom-based Weblet application dynamically creating HTML buttons, text and graphics. The interface would then appear the same, no matter the platform.

"DirectDom amplifies dynamic HTML," Donoho said, "and you bring in all the networking ability Java has, the ability to match Web applications to the infrastructure of the server. Java script only allows HTTP of the get, post and put variety. DirectDom provides a much richer communication with the server."

The DirectDom developer's kit is available on Windows 98/NT for Microsoft's Internet Explorer 5.0; it requires an Adobe Scalable Vector Graphics plug-in. A separate kit is now available for Mozilla milestone 14 for Windows 98/NT and Linux. The kits can be downloaded from IBM's alphaWorks Web site (www.ibm.com/alphaworks).

Donoho said the Internet Explorer plug-in is close to being made into a full-blown product, but it will depend upon feedback from the developer community. ▮

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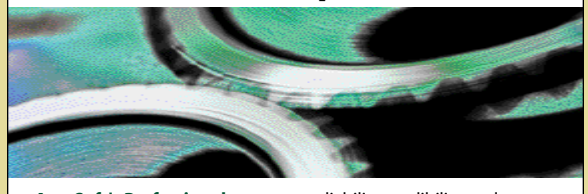

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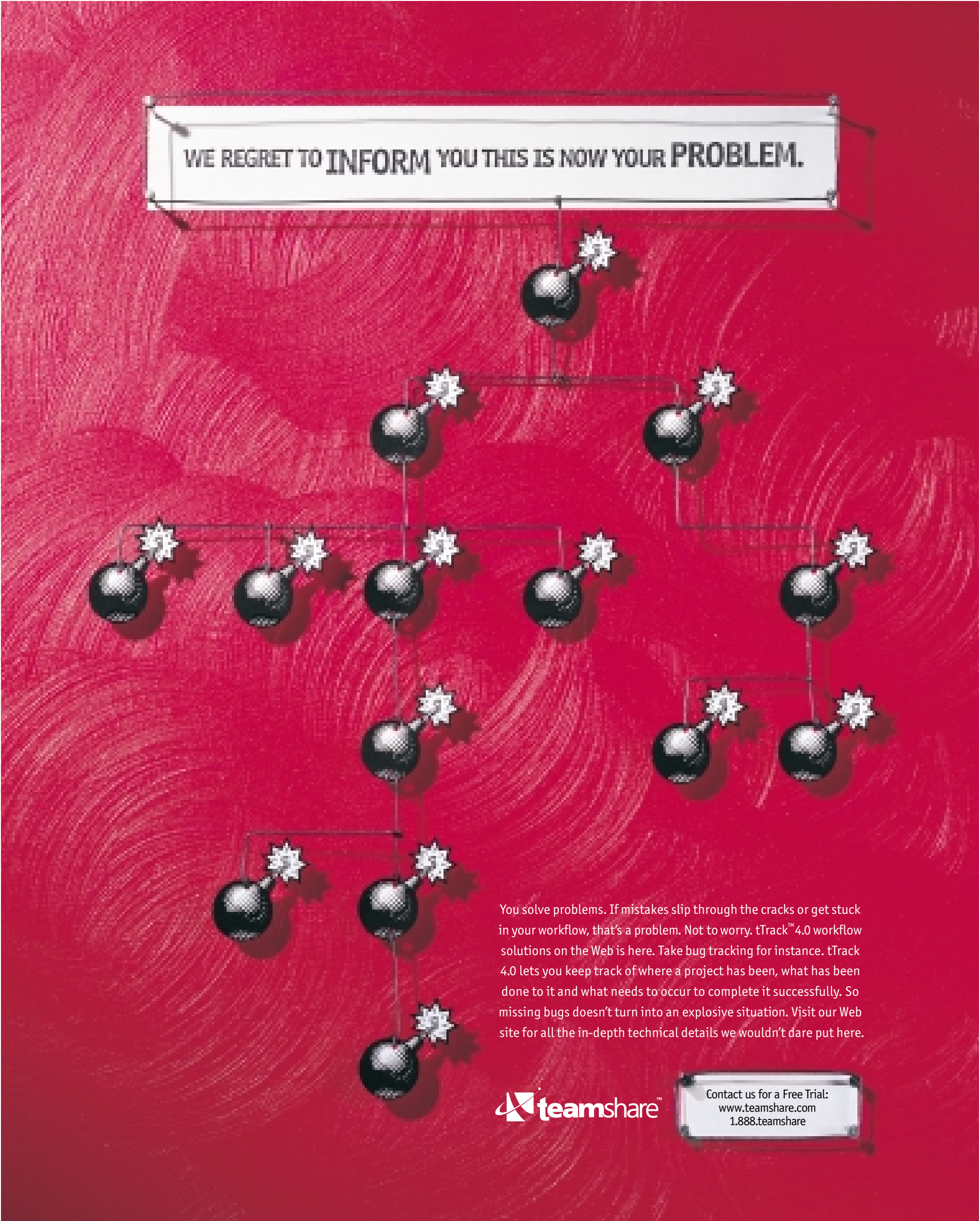

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